AT Banter Podcast Episode 249 - Steve Hoffman

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SPEAKERS

Rob Mineault, Steve Hoffman, Ryan Fleury

R Rob Mineault 00:00
Hey, and welcome to another episode of AT Banter

R Ryan Fleury 00:19
Banter Banter

R Rob Mineault 00:20
Hey, my name is Rob Mineault. Oh, and look who it is. It's Mr. Ryan Fleury.

R Ryan Fleury 00:56
It's me again. Hello, everybody.

R Rob Mineault 01:00
And no Steve Barkley today. Womp womp womppppp

R Ryan Fleury 01:06
Yeah. He was hemming and hawing about it, but he decided no.

R Rob Mineault 01:10
No, he's got his he's got to get ready for his vacation. So that's right. So we should make note for scheduling. Note for all the Steve's groupies. That's all you Barcal Heads. I don't know, whatever you whatever you want to call yourselves. Yeah. Steve is on vacation for the next few weeks. So it's gonna be a lot .. a lot of me and you, buddy.

R Ryan Fleury 01:42
Together again! Well, maybe I'll see if I can bring a guest host or two. We'll see.

R Rob Mineault 01:48
Yeah, you never know. You never know. Around here.

R Ryan Fleury 01:51
That's right. That's why you have to stay tuned to AT Banter because you just don't know what each week is going to bring you.

R Rob Mineault 02:00
Exactly, exactly. That's why people keep coming back for more.

R Ryan Fleury 02:05
That must be it. I don't know, if you had a chance to take a look at that link I sent you about that vision impaired woman on tik tok. And some of the stuff that she's talking about when it comes to her blindness. You know how Tik Tok still has a ways to go when it comes to inclusivity, diversity, accessibility, and of their website, even for that matter. I look at I looked at it earlier. But it's interesting to see that such as massive media platform still can't get digital accessibility right.

R Rob Mineault 02:42
Well, these social media platforms, they're so you know, they're just chasing each other.

Right? Like, every, they're just clamoring to be the next big platform. And I think that accessibility is fairly low, low down on their priority list, they just want to get in, get popular. And then you know, whatever die off, although, you know, we really haven't seen any social media platforms at this point really die off, I guess the, probably the last one that really did was like, my space.

R Ryan Fleury 03:13

Yeah. And it's, it's, it's interesting, because like I said, I took a look at the website, and this woman's Tik Tok channel, I guess it is, or whatever it's called. But you know, I labeled buttons, the links to her videos are just numbered, they don't actually say what the video is. There's no descriptive no descriptive text at all. And you click on it, and you start, you know, hearing or watching her video, but what a mess. But she's also she also talks about how there's a lot of people who are trolls, right, and casting negativity towards people on these platforms and the disability community on these platforms. And, you know, Tik Tok, just like Facebook, and everybody else have a long way to go when it comes to kind of keeping that stuff out. Although the other side of that is everybody has freedom of speech. So I don't know how you are where you draw that line.

R Rob Mineault 04:05

Yeah, they, I don't know. You know, part of me wants to say that a lot of these platforms are fads, like, you know, things are really big on a platform for a while until the next big thing comes out. I mean, if you think back to Facebook, I mean, yeah, sure, Facebook's still big and it's still ubiquitous, but the demographic that's using it has has definitely shifted over, you know, used to be something for, for young kids. And, but that's totally shifted, it's completely reversed. Now, the major demographic of Facebook is, you know, 40 to 60 year olds, and all the all the younger kids, they've all they've all migrated to things like Snapchat or tik tok or Instagram even. Yep. And even influencing. I mean, if you have really, really large influencers on a platform like Instagram, as opposed to Facebook, yeah, YouTube, you know, there's, it's it's always that landscape is always shifting. And I feel like that's part of this whole accessibility puzzle because they, you know, they release. Yeah. Well, kind of I mean, but it's, you know, again, it's because they're not building these things from the ground up being accessible. They all the accessibility features of all these platforms have always been things that they've tacked on.

R Ryan Fleury 05:31

well, that's one of the things they were saying when I was looking at her write up as well is one of her other influencers, friends, I think who's hearing impaired, has a channel on Tik

Tok and was saying the captioning is just horrid, right? And of course, it's back to that AI doing the captioning for you, right? It's legit probably just like YouTube. It's not that intelligent yet.

R Rob Mineault 05:54
Well, there you go. So I don't know is this is a potential guest. Are you thinking about reaching out to her? Should we give her a plug?

R Ryan Fleury 06:00
I don't remember her name. So you'd have to look at the link and pull up her Tic Tok stuff and see if you can find me some contact info. So I was thinking about reaching out to her and asked her about her Tik Tok channel and so on and so forth. But I need info. Just tic tocs not accessible.

R Rob Mineault 06:22
Yeah, that's great. Let's give her a little bit of a shout out to her. Courtney Cole. If you look in the show notes will include her tag her Tik Tok tag. That's fun to say. And there you go. You can go check out her videos for yourself. Who knows? Maybe we'll even get her on the show. Hey, have you been watching any Olympics?

R Ryan Fleury 06:45
Off and on? Yeah, my wife likes to watch the swimming in the gymnastics. And so of course, if I'm sitting there, I'll get some of it too. But as mentioned on previous shows, I'm not a big Summer Olympics fan. I like the winter snowboarding skiing, that sort of stuff.

R Rob Mineault 07:00
Any of it described if you watch any describe content, or has it been described or what's the

R Ryan Fleury 07:06
To be honest, I haven't even noticed supposedly, I think NBC said all of it was going to be described. Right. And we do have audio description turned on on our cable box. But I don't even notice. Yeah, I'll have to pay attention tonight and see

R

Rob Mineault 07:22

If any of our listeners have been watching the Olympics, and you've noticed that they are audio described did drop us a line.

R

Ryan Fleury 07:30

Please reach out to us.

R

Rob Mineault 07:39

Did you hear this? Did you hear about this? gymnast that dropped out because of mental health issues?

R

Ryan Fleury 07:47

No.

R

Rob Mineault 07:49

What's her name? Simone something ... Simone Biles. I believe her name is? Young American gymnast. Yeah, she's dropped out of the competition citing mental health issues. Guess just their heads not in the game or whatnot. I don't think she's pulled out the end of the entire Olympics. Just certain events. She's kind of going to see if she can, I guess, participate in some of the later gymnastic events. I thought he thought it's interesting. That it's never happened before.

R

Ryan Fleury 08:24

Yeah, there's a lot of firsts happening at these Olympic Games.

R

Rob Mineault 08:27

Yeah, I mean, on the one hand, I think it is good. I think mental health is always a good topic. And it's it's something that needs to not be stigmatized and to be accepted, you know. And so in that sense, I think that it's that it is good. It's It's good. That's something higher profile like that is happening. And I mean, I don't think that it can be, you know, understated, how much of a hard decision I'm sure that was for for her. I mean, you don't train for years and years and years to go to the Olympics to just get there and arbitrarily just pull out of events. I'm sure that you know, this is something that's serious to her. And

it's not just her, like not feeling like competing. So you know, I'm sure it's, it's something serious. But yeah, it's just it's it's really interesting. We're having we're having discussions about things that we've never had before. And I think I feel like that's always a good thing.

R Ryan Fleury 09:25

Yeah, and keep in mind, these Olympics were supposed to take place last year and got postponed due to the pandemic. So everybody that was possibly at their peak, and ready to compete, had a whole nother year of going through training practices, getting ready again, in the hopes that the Olympics were going to happen this year. And they almost did and as well. So you know, there's there's that struggle as well that everybody's had to deal with.

R Rob Mineault 09:52

Yeah, I'm sure that was an easy as well. Although, you know, it seems to me like I know that we're a little bit down on the Olympics last week, and I kind of was like, Oh, that's there's gonna be a disaster I've seen so far, you know where we can it seems to be going. Okay, so I don't know, maybe, maybe it is okay. But I, I guess we'll find out in a couple of weeks when you know, any sort of it takes that long for, you know, the virus to spread. So we'll see if there's any sort of big spike after these, hopefully not. Well, and part of the problem is that in two weeks, that's when Yeah, we're gonna find out whether this was ended up being a super spreader event. And so if there is a big spike, well guess Guess what? the Paralympics is walking straight into that. So it could actually be a really bad thing for the for the Paralympics.

R Ryan Fleury 10:43

Well, and going forward to it's going to be really interesting, because we're already starting to have discussions or see discussions of employers saying you can't come back to work unless you're vaccinated. Google announced I saw today that they are requiring their employees to be vaccinated. So what is that going to look like? Three months, six months from now, when people have a right to vaccinate or not? It's not against the law not to be vaccinated. And can employers? Do employers have the right to let you go if you're not vaccinated? Yeah, I don't know the answer is going to be a very interesting times going forward.

R Rob Mineault 11:21

Well, you know, like I said, we're not we're not really out of the woods yet. And I just

thought, hey, that they've they've reversed the mask mandate, even here. I know that they it's been a few days since they've done it in the States. But they just did it here too, in Kelowna, and in the interior, interior health region, because there's a bit of a spike going on there.

R Ryan Fleury 11:44
So yeah, they had 150 new cases yesterday.

R Rob Mineault 11:48
Yeah, they said, half of that number. It was only just from that district. So right. they've they've reinstated the mask mandates for indoor gatherings there. So yeah, you know, it could very well be that we see a fourth wave here soon enough. So yeah. Great, great news.

R Ryan Fleury 12:13
Well, there was also another announcement on the news the other night that said, for those people who are not vaccinated, there are probably going to, they're probably going to see restrictions placed on them, versus those who have been vaccinated. So, you know, our rights and freedoms, I guess, if you're vaccinated are going to be great. But if you're not vaccinated, you may not be able to go to a concert or go to the theater or, you know, whatever the example might be, unless you show proof of your vaccine.

R Rob Mineault 12:47
So, yeah, well, I don't even know about that. Because really, has there been some sort of a mechanism where they really been tracking vaccinations like that, would you in order to do something like that? We they would need to issue some sort of a vaccine passport, right?

R Ryan Fleury 13:08
Yeah, which they haven't done.

R Rob Mineault 13:10
They haven't done it at this point later. So that and now all that stuff takes months to spin up. Yeah. So I mean, there's there's gonna be really no way to show a really effective,

foolproof proof of vaccination anyways, at this point, so it doesn't even matter. Like how hard is it would be to go to your employer and be like, Yeah, I got vaccinated. Totally. Here you go. Here's a little cardboard card. Or for a sticker, here's the here's my sticker that says, I got vaccinated.

R Ryan Fleury 13:42
Yeah, that's no good.

R Rob Mineault 13:43
I don't know how I don't know what's gonna how that's all gonna work, either. But whatever. It's beyond our pay grade. All we have to worry about is what the hell we're doing today.

R Ryan Fleury 13:52
Well, today, a nice segue, by the way.

R Rob Mineault 13:55
Thanks, and I was practicing all day.

R Ryan Fleury 13:57
Excellent. Today we are speaking with author, entrepreneur and CEO of founder space. Steve Hoffman. The Hoff, Captain Hoff

R Rob Mineault 14:08
Yeah, I guess The Hoff is taken. I believe. He couldn't he couldn't take that moniker. But so it's Captain Hoff. All right. That's right. Cool. Yeah. I'm interested to hear about some some speculative tech.

R Ryan Fleury 14:23
Yeah, reading some of his bio and watching some of the YouTube videos he's done. There's some pretty interesting tech that is being worked on. And some of the things he will probably talk about.

R Rob Mineault 14:36
Yeah, I took a listen to a little bit of his stuff. It's, it's it's interesting. I mean, it's it's pretty out there. Pretty cutting edge. So I think we're still a ways away from a lot of this stuff. But it's gonna be interesting to hear what you know, what could be down the road for, for both mainstream technology as well as assistive technology applications.

R Ryan Fleury 14:57
Yeah, well, and a lot of technology starts out with mainstream And then trickles down, right? So pretty much everything. We probably won't see much of it in our lifetime. But the generation coming behind us be ready.

R Rob Mineault 15:11
Maybe they might have other problems, problems to fix.

R Ryan Fleury 15:15
The climate

R Rob Mineault 15:17
Yeah, it's hot as hell.

R Ryan Fleury 15:23
You got to get a portable air conditioner.

R Rob Mineault 15:25
And apparently they're having heat waves in Europe. I read today Germany's getting up to like 42 between 42 and 45.

R Ryan Fleury 15:38
it's warm.

R Rob Mineault 15:39

All right. Well, you know, enough about current events and the weather. Let's bring on our guest.

R **Ryan Fleury** 15:47
Joining us now is Steve Hoffman. Welcome, sir.

S **Steve Hoffman** 15:51
How are you?

R **Ryan Fleury** 15:52
Fantastic. Thanks so much for joining us today, we really appreciate it.

S **Steve Hoffman** 15:56
Oh, my pleasure.

R **Rob Mineault** 15:58
Maybe we can just start out by just giving us a little bit of a snapshot of what what it is that you do. And what sort of got you into talking about future tech in terms of assistive technology.

S **Steve Hoffman** 16:14
What I do is I run a startup incubator and accelerator. It's a place where we bring in young companies, and we help them raise capital venture capital, we help them with marketing, we help them with their business plan, we help everything they need legal, whatever they need to get going. That is my company founder space has been around for over a decade, we've been doing that. I'm also an entrepreneur. So I've run three venture funded tech startups out of Silicon Valley. And I know what it's like, what got me started on the future, is that I have the opportunity to meet really smart entrepreneurs, really smart scientists, really amazing investors all over the world, that are funding projects that will eventually change everything. We know everything about business, everything about our lives, government, you name it, people are innovating on that. And that got me thinking, what, what, you know, what will these technologies mean, for all of us, like whether you have a disability, whether you don't have a disability, how will they play into society, and I spent a good chunk of time writing a book called "The Five Forces That Change

Everything". And in that book, I go really deep on some of the technologies I'll talk to you about today.

R **Rob Mineault** 17:43

Great. So and I'm just kind of curious, because you're interfacing with a lot of these entrepreneurs and a lot of these startups. And I'm sure you've talked to people who are actively working on things like assistive technology. And I'm always curious, because what we've generally found in the past is that a lot of these technologies are developed for mainstream applications. And then at some point, someone goes, Oh, wow, you know, what, like, this would actually be really handy for like, whatever, blind people, but it's almost an afterthought. Is that what what use 10 tend to find? Or are there people actively out there that are like, actively looking for assistive technology solutions and developing products specifically for that?

S **Steve Hoffman** 18:31

I find both cases to be true. Of course, there are a lot more people focused on the mainstream market, because there's a lot of money to be made there. So an example is voice recognition technology, you know, and Siri and Alexa and all these, you know, they were developed for the mainstream, but we can see the applications as an assistive technology. They're pretty amazing, what what people can do with them. But there are startups out there that are just focused on assistive technology. So I have startups who have been working in our incubator, with new types of Braille readers like that are, you know, electronic and, and really amazing. I have, you know, been working with startups who are developing brain computer interfaces, and tying them to prosthetic limbs, which is a whole new area, which will dramatically affect people who've, you know, lost a limb or are in some way disabled,

R **Rob Mineault** 19:33

What I find really fascinating the brain computer interfaces, it's incredible. And even, you know, the probably the last time we really did a bit of a deep dive into that it was probably five or six years ago, and I remember even at the time, some of the, the advancements that they had made at that point, were pretty amazing. But I mean, part of the the challenge behind that is that at least historically, in order to sort of get More than surface level brainwaves, you you'd have to be fairly invasive in terms of like, you'd actually have something like actually drilled into your head to to actually access that is that changing are they is the technology getting to the point where we're going to be able to do some of that, like access things like the motor cortex, without having an invasive

procedure done,

S Steve Hoffman 20:26

There's been enormous steps made in that direction, we call these non invasive brain computer interfaces. And basically, they're still limited. Like, if you really want to have a greater degree of control, you do have to get a chip put in your head. And most people won't do this, like, who wants to have their head cut open and that chip implanted in their brain, it's a risky operation, and you don't know the long term effects. But there are people who are doing this right now. So they are people who have conditions like locked in syndrome, where they've had a stroke, and they're completely paralyzed. So their whole quality of life is, is has been reduced to a very narrow way that they can actually communicate. But with a brain computer interface, actually a chip in their head. And they've done this, people can use robotic arms with their brain actually use that robotic arm to feed themselves, they can sit in a wheelchair, and with that chip in their brain drive, or guide, that wheelchair went round, they can also send text messages just by thinking the thoughts in their brain and communicating that over the internet. So that itself is amazing. And you know, Elon Musk, he wants to put chips in everybody's brain, he wants to take this mass market. But most of the companies out there are starting with people with disabilities. And they are rolling out right now there's companies like Colonel, many other companies that are developing these really advanced brain computer interface chips to put in people. However, that said, we also making great strides in non invasive and the most basic form of non invasive brain computer interface is where you put electrodes around your skull. And this can be a simple cap that you wear with the electrodes, and they read your brainwaves. Now, traditionally, these have been very crude instruments, you couldn't really do much with them. However, these eg devices are getting better, thanks to artificial intelligence, they are able to sit through all the noise because they're very noisy, and actually pull out information from people that that is useful. So controlling a drone turning on and off the lights, basic things like that. Now, on the horizon, there are a host of new technologies that are non invasive for brain computer interface, everything from lasers, that that can be shot into your head that are not dangerous, they penetrate the skin and penetrate the brain, to different types of sound, and other things that they can use to start to see into the brain. And they have been using these, they have one in at UC San Diego that they were using, where a person could act, they could actually read the thoughts of a person, which is absolutely astounding. So you're we are getting these brain computer interfaces that maybe not next year or the year after, but give us a decade or two. And these are going to be really useful to both people with disabilities, but also the general public, it's moving so fast. I, I can also tell you, from my personal experience, I've done a lot of consulting with both big corporations and startups in the brain computer interface area. And it's really a lot of money is going

into this. And a lot of applications are being developed for this. For example, Facebook just acquired a company out of Silicon Valley that makes a device that can actually sense your nerve, what your nerve signals your nerves are transmitting from your brain to your hand. So you wear this device on your wrist. And from that simple wrist device, you can start to control things like a hand in a virtual reality, or in on objects in augmented reality. So it doesn't necessarily have to be a device that's around your brain. It just has to be a device on your body where you're communicating through, let's say your limbs trying to move your hand and it intercepts those signals and then it It decodes them. And then it can actually produce the same result in a computer environment, or can control a robotic arm remotely doing the same movements as your HAMP. That is a very basic example. But they're taking the same technology. And they're putting it into prosthetics. So if you if you lost your arm, or your leg, you can actually capture those signals and send them on through the device, and not only connect device, grasp something, or propel you along, like as if as walking, but that device can also be equipped with sensors that feed back. Oh, the what that artificial ham, that prosthetic hand is feeling and touching, and transmit that back into your brain. And that's where it gets really interesting.

R Ryan Fleury 25:52

It's interesting, you know, I have so many questions, because as somebody who is totally blind, and had sight full sight for 23 years, I lost my sight in a car accident. And I know there are some people who would say, why, why? Why do I want to get my sight back? Is it okay to remain disabled? Or blind? Are you fine with that everybody has a choice to make? You know, for me personally, I think if I could get some usable, functional vision back, probably Sign me up. There's a lot of things I miss seeing. But the other side of that coin is, you know, we we are in the assistive technology field. And we know the costs involved with a lot of this stuff. So is some of this technology, you know, of course, right away, it is mainstream tech, and will trickle down for the most part. But all of this stuff is very, very, very expensive. And so, you know, have Have there been questions about ethics around this. And in conversations with the disability community about these different technologies.

S Steve Hoffman 27:03

I don't think there are enough conversations. Now there's specific startups that are focusing on the disabled community. And they are engaging their target market, let's say, and getting feedback from them in the development, but more broadly, not as much as you would like. So most people are just focused on what they're focused on making money. And they're going to go for the biggest market and the biggest profit they can. That said, in Silicon Valley, I know a number of startups doing amazing work. And I'll give

you an example of one. So there is a company run by a neuroscientist David Eagleman in Silicon Valley, and it's called Neo sensory. And they are actually making a device for hearing impaired people and deaf people. Now, again, this is just a little bracelet you can wear on your skin. And it literally can transmit audio that you would normally hear through your ears, into little sensations pulses on your skin. And what they found in testing this is that the brain because the brain, any input to the brain, it will automatically look for patterns. brains are pattern matching machines. So within a relatively short amount of time, like a week, a person can start a deaf person or even a person with hearing will start to intuitively interpret what the audio is, and, and actually use that as information about the world around them. Now, David Eagleman, he's pretty amazing. He actually created a whole vest that does this like a vest. So all across your back, you're feeling the sensations. And the vest is very good because it has so much more surface area. However, most people don't want to wear the vest every day. So he has compacted it down into a bracelet, which he is hoping to get out to everybody. You know, every anybody with a hearing disability can get this. And if you're partially your your, your you can hear but you you know you're partially deaf, you can still use this to get cues from people around you that you might have not been aware of before. So this this device is is really cool. It's not on the market yet. But it he what he wants to do. He has venture funding from some big venture capitals, his he literally has focused on this problem and is bringing it to market just for the disabled community.

R Ryan Fleury 29:47

It's interesting to hear that and I may have to do a little bit of research on on David and possibly get him on the show to talk about that.

R Rob Mineault 29:55

I want to circle back a little bit and talk about artificial intelligence, I feel like artificial intelligence is is one of these terms that a lot of people don't really understand what it is we're talking about. But I feel like it's been a real game changer in terms of its application. Because really, when you apply it to all kinds of different technologies, it really elevates those technologies. Could you in sort of just kind of general layman's terms? Explain what what we mean when we talk about artificial intelligence, and maybe some of the applications that it's it's being implemented into.

S Steve Hoffman 30:39

Artificial intelligence is a really transformative technology. Because literally, you can apply AI to almost any problem out there, and come up with a better solution. So what AI does

AI feeds on data. So the more data you give an AI, those algorithms, the smarter it can become. In this way they call deep learning, AI can learn as it as it's used in real life, or in simulations. Now, there are a lot of entrepreneurs out there who are looking to apply AI to helping people with disabilities. And I gave the example earlier, brain computer interfaces, like you're getting all this information, all this data from the brain, we don't know what it is. And it's really hard for humans to process it because it's just such a massive amount of confusing information mixed in with random noise and other things. But an AI is really good at that. It's really good at looking for correlations, pattern matching, and putting those pieces together in a meaningful way that it can take action on. So right now, I'll tell you a few really cool AI applications that have will have impacts for people with disabilities. Number one, they are building for they're building exoskeletons right now, so exoskeletons for those of your audience who don't know, they are literally like a robotic skeleton, you know, on the that you wear, like a suit, a suit of armor that can propel you. So this could take a person who can't walk and enable them to walk, and even run. It can take people they're using it for industry like construction, allowing people to pick up heavy objects, or in you know, in warehouses to pick up and move heavy objects because it makes them into almost superhumans. This technology is relying more and more on AI. Because you the human being has to control this exoskeleton. And the best way to control an exoskeleton ultimately will be with your brain just like you control your normal lens. So the exoskeleton will be extracting that information, the AI will be extracting that information, analyzing it and allowing people to use these exoskeletons. Now what's really cool is not only have they developed these exoskeletons, but they are now developed what they call Super numarray limbs. And they've been working on this at MIT for a while and other universities. And supernumerary limbs are extra limbs you can attach to your body. And those limbs can do all sorts of things. So people could start to adapt who they are and how they function in the world in totally new ways. And again, in the lab, they like in Japan, they've been working on brain computer interfaces with AI so people can control this. Now, that's just one example. AI is everywhere, in everything we do, like it's in our smartphones in the applications. So if you're using Siri, that's all AI, if you're using Alexa from Amazon, the AI is powering that every time a you are going to interact with one of these apps, it is going to be going into the real world and figuring things out. And AI is at the point now where it can take robots and literally, you know, drive them down streets, we know self driving cars, you know, and robots, a person with disability will be able to have an AI powered robot in their house, doing a lot of the things that they may have had to hire a human for people who are aging, right and can't take care of themselves anymore will also be using these robots. So AI is in so many different areas. And if you think about it, some people with disabilities like if you are a stroke victim, and you you know, you can't get around for whatever reason can't communicate. Let's say you can't speak with a stroke while they're working on AI now that will help you communicate that will look into your brain. See what you want to say. And even though you can't say it will

say it for you. So those are just a few examples.

R Ryan Fleury 34:59
I'll be dropping a a lot of F bombs.

S Steve Hoffman 35:03
Yes, and the AI will have to deal with that.

R Rob Mineault 35:07
Good luck AI. They'll just, they'll have it he'll have some sort of an auto conversion of autocorrect shock every time you drop an F bomb, bring Clippy back. Robotic Clippy wandering around my apartment? So let me ask you this then. So how fast is some of this technology being developed? And I know it varies depending on who's working on it and what the technology is. But like, do you see noticeable difference like say in just a year when you compare, you know where one technology was a year ago to where it is now? Is it is it shocking to you?

S Steve Hoffman 35:54
In certain cases, it is. But we have to remember, from the time that technology is conceived till the time it actually has practical applications, like in the world can be a very long time. So AI itself, that was around in the 1950s, they had pretty sophisticated algorithms way back then. But it is 70 years later, that we're now seeing the full potential of AI, it took a long time, because AI needed a lot of other things. They needed sensors, all these sensors to get gather data, they needed the internet to gather data off the internet, and all our communications to feed these AI to make them so useful. So some technologies move really fast. Others, like AI move really slow. And then all of a sudden, they hit an inflection point, wherever the whole ecosystem for that technology is functional, and then they just take off. So for each of these technologies, it can be very hard to predict how fast it will come What a big impact will have. I remember when I was a kid, at University of California Davis, where my father taught, there was a professor Paul Mahler developing flying cars. Well, he was half a century to set like he, you know, today, we are starting to see flying cars, like they're becoming a reality, but in his kind of, he's retired now, unfortunately, he was just way too sick, like we didn't have, you know, everything we need, including AI for the flying cars to balance them and control them that we would need to actually make them practical. So you will see some of these technologies coming really fast. So the ones the AI is already here. So anything AI can be

applied to to make your life better as a person with disabilities, you can bet that eventually it will be applied to that. And that's a great thing. other technologies that will take longer. So let me talk about some of those because there's some really cool technologies kind of in the pipeline right now. One of these is called bio printing. So they are actually taking cells, living cells, and with a 3d printer printing out organic matter. Now, these can be things used in lab cells used in laboratories, but they hope one day to actually be able to print entire organs. So people who you know, need an organ transplant, they can print it out, just like you would print out, you know, something on a 3d printer. They also hope, you know, like if you lost your ear, if your ear got suffered, they would hopefully be able to print out an ear for you, but you could literally attach onto your head. Now, that's still a ways out. That's a ways out but they are working on that now in the lab. That technology called CRISPR, which allows them to edit genes is another treasure trove of of new products and services and abilities. It will give human beings so they have already taken people there's a there's people, some people have congenital blindness, they're born. And at a certain age, they go blind. Well, they actually came up with a gene therapy, gene therapy that they can administer to anybody with this disease while they're young and actually prevent blindness. So it's spark therapeutics, that's the company that does it. And it's incredibly expensive, unfortunately, just like way too expensive, but it does work and it has totally changed people's lives. You know, they go from a person who would for sure go blind and have this disability to somebody who isn't. They are also working on bionic eyes, which you may be interested in Ryan. They are the everything like your head is literally your brain is literally trapped inside a black box. Your brain doesn't know anything. thing about the real world, all it knows is the signals it's getting. And they are getting really good now at making signals that literally can feed directly into the optic nerve. And you could see now those aren't quite ready for primetime yet, but they are coming. Same with auditory signals. So we will have in the not too distant future of bionic eyes, and bionic ears, and things like that, that will be coming into the marketplace. Another product, which is here today, and I don't know if you've tried this, Ryan, I'm really interested in if you have, have you tried the BrainPort product?

R Ryan Fleury 40:44

No, but I think in our previous assistive technology company we worked at the BrainPort has actually been around for a while is that the one that gives you the little haptic feedback on your tongue?

S Steve Hoffman 40:53

Exactly. So you can literally start to see through your tongue.

R Ryan Fleury 40:59

Yeah, I've never tried it sounds too bizarre for me.

S Steve Hoffman 41:02

You know, it sounds bizarre. But if you once you understand neuroscience, you begin to understand just like the that David Eagleman is developing something where you can hear through your skin, seeing through your tongue, all it is, is signals. So when you boil it down to vision, audio, everything touch, it's just signals going to your brain. So there are other pathways into the body where we can put these signals. And that is, I will tell you, it's the next frontier, like for people with disabilities, it will allow people with disabilities to all of a sudden really overcome these disabilities. Simply because our brains are so malleable, they're so good at interpreting whatever they're fed, that it doesn't matter if it's a signal through your tongue. Now, the brain port, and I recommend you at least try it just, if only for the fun of it, it's still a very fuzzy image, it's not, you know, it's not something that's high resolution, it's very low resolution, because the number of nerves in your tongue is limited. And you have to walk around with this device on your tongue, as well as kind of a camera like device on your forehead. So it's a bit awkward. But the possibility of that happening is what's amazing that we can even do that.

R Ryan Fleury 42:24

Yeah, for sure. You know, I don't know where we're at with brain mapping, mind mapping, but you know, I've always remember that the brain is so complicated that, you know, we still don't have a full understanding of how it all works. And so, you know, I know for myself, my, my eyes themselves are shrunken, because they were damaged in my accident, my optic nerve was severed. So for me, they would have to bypass the optic nerve altogether and go straight into the visual cortex. But something like the brain port, you know, if they can get some usable functional vision would definitely be an option for some people if they chose to go that route.

R Rob Mineault 43:01

So I've another question for you. So how, because I know that a lot of the challenges of some of this is that technologies are often very connected. So you can, we can be fairly advanced in one type of technology. But if another the like sort of a technology that needs to be paired with that technology, in order to make a marketable device is is possible, it slows the process down. And the the example that I can think of is, say VR headsets. For a long time, we had we had sort of part of the solution, we were able to, you know drive an

image to two glasses, but we didn't have this the the LCD screen technology to the point where we could have a small enough screen that would fit into a headset. And so it took a while for those VR helmets to really materialize. Is that is that kind of a thing in this space?

S Steve Hoffman 44:02

That's absolutely a thing. So we call it dependencies. So you know, if you're going to build a product, and you have one technology that's ready to go, but it's dependent upon another technology that isn't quite there yet. You can't do it, you're it's a roadblock, and you're going to have to wait. Also, possibilities open up when you pair these technologies in new ways. So a lot of times, they'll have the concept for what they want to do, but they won't know all the different technologies to use. Now, fortunately, the internet itself has been an amazing invention. You know, one of the great inventions of humanity. That goes you know, in parallel, like writing was a great invention. the printing press was a great invention. They transformed the world. With the internet. what it's done is it's connected everybody, all of our brains, all of our minds in the world and it's Putting massive amounts of information, making it available to scientists and even lay people all around the world to access. So these technologies as they are born, they proliferate very fast. And we, it doesn't take, it only takes one person in one country in one city, it could even be a remote village to actually see how to pair these technologies together to get over the hurdle that they need to get over to actually make it possible. So the result is that innovation is speeding up, we are going to see more new products for disabled people in the next 10 years, probably, then we have seen in all of history, like just a number of products and things, if it is, what we are seeing is that all technology and the commercialization of these is going really much faster than it ever has historically. I mean, you look in for millennia, like we barely did anything for disabled people, like there was almost no, you know, you go back to, you know, a BC or you go back to, you know, you know, 1000 years or, or 1500 years ago, literally, like they just they didn't, you know, they're very crude, and almost nothing changed for like, hundreds and hundreds of years. Now we see new products coming out all the time. Like there's, you have to show that it's highlighting all these new things that are coming out. So I think it's a for the disabled community, it's never been a better time, and it will only get better.

R Rob Mineault 46:36

So how much does the market drive a lot of this stuff? And I asked because I, as we were talking, I was thinking back to the Google Glass, and how that was a technology that came out. And it really it seemed like it got kind of got to look a lukewarm reception, it kind of felt like it was it was too soon. And really, we haven't heard a heck of a lot more from them. I know that that you know, it's still around. There are companies that are using

it as a platform to to build other things. But really, it hasn't become that next big thing. How often does that type of thing happen and how much is does the market factor into, you know, developing and emerging technologies.

S Steve Hoffman 47:26

The market plays a pivotal role. The market is the engine that drives commercialization. So you can have a lot of technologies and laboratories and universities, government institutions that are being developed. But unless there's an application, where somebody can make a return on their investment in our capitalistic society, that usually gets overlooked. And this is true of everything. Like it's not, it's true of invite products for the environment, unless they can figure out a way to make money. You know, it's hard to bring those products even though they'd be very good for our environment. Tomorrow, tomorrow people to use, it's true of drugs, the big drug companies, they're all after the blockbuster drugs, they want the trucks that are gonna make billions of dollars for them. And these, these diseases that are really niche diseases get totally overlooked, like nobody's putting any money into doing them. And it's, and the same is true for people with disabilities, like everybody going to go towards the the money is going to flow into those ventures, those companies that are going after the biggest potential market, which means the biggest return on investment, and that's, that's just part of our system. Now, of course, we do have universities and government funded institutions and nonprofits that are using their resources to try to commercialize some of these products and bring them to, to life even when there isn't a big market. But it pales in comparison, the market is the Goliath and it kind of it, you know, it's going to be, you know, 1000 times more powerful than independence because they just don't have the funding to to do what the market does. So why you rightly pointed out that many of the products out there for the disabled community come because they were mass market products and became developed and then they were repurposed for the disabled community. That won't change unless our system totally changes.

R Ryan Fleury 49:33

And I think though, that mentality has to change because we, in the disability community are consumers who largely get ignored, and we have billions of dollars to spend. So, you know, there are people that with invisible disabilities as well. There's money out there, but nobody's coming after us.

S Steve Hoffman 49:53

That's true. And either it's, you know, honestly, if an entrepreneur thinks they can make

money and If a venture capitalist which funds the entrepreneur sees a return on investment, they will go there. So some of it is communication, right? So, if there if there is money to be made out for them, you literally, and maybe you guys are one of the audience, you know, you become that entrepreneur and you go out and start pitching the venture community like to get them to fund this, you have to take that action. And if it's true that there is a big market, I tell you, it will get funded, nothing where people can make a lot of money is overlooked. It is a people are greedy, right? It's trite. But if there isn't a big market, that's a problem. Yeah. Like, that's when it becomes really hard.

R Rob Mineault 50:43

I'm curious, because I've really felt like, especially in the past few years, I feel like wearables have really been something that have been hot, and that have been really actively working on and seems to be the new sexy, is that the case and what what kind of new wearables are sort of coming down the pike if if any.

S Steve Hoffman 51:06

wearables have been hot, you know, the Apple Watch the I watch, on Fitbit, all these things really innovative, coming to market, there's a lot of new ones coming, because sensor technology is also improving, like the way we can, you know, sense bodily functions, I know startups out there that are like, sensing, they have sensors that can sense the molecular content of people sweat, and in your sweat that's coming out of your body tells you a lot about your body, there's a lot of information there that they can act upon whether you know you have a disease, whether you know how your metabolism is functioning, all these different things. So we're going to continue to see developments with wearables, you know, we have virtual reality, wearables, you know, Apple's said to be releasing a new augmented reality, wearable, you know, and some of these may help people with disabilities in multiple ways. So this is going to continue. Now. Making wearables and making new hardware devices and new gadgets is a tough business is really actually hard. And very, it's not most of the capital, honestly, today in Silicon Valley is flowing into software, because it's so much easier to make so much more money with an application that you put out there for business or consumers than it is to make hardware and distribute that and make the profit you would on hardware. So there's some of that dynamic, and that's slowed wearables down a little. But I will tell you, a robotics and wearables, they're tough industries, but they are progressing. And there is capital flowing into them. And there is enormous potential. I want to point out one other thing, there's this whole area now, now that we've decoded of that, our genome, now that we understand that, you know, genetics, and how they're the building blocks of life, and we can read this, like a computer code, there is going to be so much innovation, around gene editing, just

enormous amounts. You know, at Texas a&m, I can give you an example, they have actually found out how to regrow the toes of mice, when they are suffered. So they can regrow limbs on it, it's not a salamander, it's a mouse. And if they can do that on a mouse, would they be able to do that on a human with a much more complex limb, like a whole hand, but not just fingers? perhaps someday they would. So they're working on that. Now, in other laboratories, they are actually they have figured out with stem cells, how to grow brain tissue, like this is they are making mini brains, little tiny brains, that actually are that actually have a degree of consciousness, very limited consciousness, but they can actually function they put one of these mini brains into a robot and it could drive itself around, it could learn to navigate, they put these mini brains into like under the skin of rats like and they can live a long time in function. So this type of development, you can see that someday we may be able to if somebody has brain damage, right, we may be able to heal that brain damage, like actually regrow parts of the brain, rewire parts of the brain, all sorts of disabilities that people may suffer in the future. These new technologies, especially if people are born with these disabilities, we may be able to prevent them by literally editing their genes, when they're, you know, before they're conceived like when they're an embryo. You can literally inject the DNA fix to a problem that they would have grown up with. Whether it They would be deaf or blind when they're born and prevent that from happening. So that's a whole nother area that I am super excited about.

R Ryan Fleury 55:07
I hope I'm gone when they start doing designer babies.

S Steve Hoffman 55:13
You know, all of us are going to be like dinosaurs because those designer babies are going to be like super humans, like with so smart and perfect. And you know, they won't ever get cancer and all this stuff. And we'll be the old model.

R Ryan Fleury 55:25
I hope I'm gone. Dr. evil's gonna take over. Yeah, but it's happening. I tell you, they're working on it.

R Rob Mineault 55:32
That's great. Well, speaking of dinosaurs, is anybody working on cloning dinosaurs?

S Steve Hoffman 55:37

They are. So actually, George church out of Harvard, he actually was in my book and endorsed my book. he's a he's a great guy, like one of the premier, genetic scientists in the world, probably number one, the best known, he is actually working on resurrecting the woolly mammoth. So he's basically they're taking DNA that they found in Siberia from a woolly mammoth. And they are taking elephants today and elephant embryo and injecting that in. And it's not really a pure woolly mammoth. It's sort of a hybrid of a woolly mammoth and an elephant. So he's basically said, he believes that, that we can repopulate Siberia at some point with these new Malmo fans, you know, and woolly mammoth combined with elephants. And that's your first step towards Jurassic Park.

R Rob Mineault 56:32

Well, hey, listen, the woolly mammoth is a good place to start. They're they're slow. And Darien, I feel like that's, that's okay. That's, well, let's talk again, if they start to work on T Rex.

S Steve Hoffman 56:45

Yes.

R Rob Mineault 56:50

Steve, thank you so much for taking the time out and chatting with us. super interesting. love to have you back on and talk again and talk tomorrow. Because I feel like we could have talked for another hour, easily.

R Ryan Fleury 57:02

Yeah, we didn't even touch on your books or anything like that. So for people who are interested in more information about you, where can they find you?

S Steve Hoffman 57:09

They can go to founder space.com. Just type in founder space, go there. My books are there. And book, if like you love this technology, type in "thefiveforces.com" And that you will find a book that goes into all of this technology in every facet, you know. And you can also find me on social networks, just search for founder space.

R Ryan Fleury 57:35
And are your books available in Kindle or audio?

S Steve Hoffman 57:39
They're everywhere.

R Rob Mineault 57:41
Excellent, excellent. We'll make sure that we include those in our show notes as well. Thank you. Alright, Steve. Well, thanks again for joining us and have a great rest of your night to watch out for Mammoths.

S Steve Hoffman 57:54
Yes, I will. Thank you for having me.

R Ryan Fleury 57:57
Thanks, Steve. Take care.

R Rob Mineault 57:59
Man, I want a woolly mammoth.

R Ryan Fleury 58:02
And mini woolly mammoth has a host pet.

R Rob Mineault 58:05
they didn't even mention that. But yeah, that could be a whole thing. miniaturization

R Ryan Fleury 58:08
Absolutely. It's a thing.

R Rob Mineault 58:11

That's Well, that's pretty wild that they can if they can regrow limbs. That's, that's a that would be pretty major.

R Ryan Fleury 58:19

Yeah, yeah, I'd already sound that it sounds like they're doing it. So in time, like Steve mentioned, you know, the being able to grow a whole human hand and maybe not just a finger or toe or growing year or even, like you mentioned printing near. That's just fascinating.

R Rob Mineault 58:38

It is really fascinating. But it's also you know, I just feel like it's technology's really weird in in a capitalistic society because, because of this whole thing about being driven by the market, you know, we can have these technologies in place that it's possible to do something but if there's no real practical application to it, that's gonna make somebody money. It doesn't happen.

R Ryan Fleury 59:05

And there's there's no feel good willingness to help a specific community, whether it's Parkinson's or whatever, right? It's, it has to be like you say market driven and they're not going to help out the 500,000 people who may have you know, MS. They're gonna go for the bigger populations. That's where the money is.

R Rob Mineault 59:27

Yeah, well, but I yeah, I mean, just something's not even they're not even going to bother bringing something to market unless, and I get it like that's that's the society that we live in. We live in a capitalistic society that's how people live people have to make money no one's going to you know, do something for nothing, unless they can already afford it. And if they can already afford it, they've already made a bunch of money. So you don't I mean, like, everybody has to make a living so I so I get it. I get the business case for it. Yeah, but it just makes me wonder like how many technologies are completely baked They're ready to go. But there's just no real application for that particular technology that is is marketable. And so that technology just sort of sits in languages. And you know, I think back to the Google Glass, that was a that was, what, five, six years ago at least. And that thing was pretty much ready like it could have gone to market if if they figured they could have made a go with it. But nobody seemed to like it, I guess it got a lot of pushback, did people didn't seem to be ready for it. So it just went back on the shelf. And it's just been

sitting there until somebody like Apple comes along, and sort of, you know, cracks the code and builds a device that is has real market appeal. And then I'm sure, you know, Google and Microsoft and Facebook, they'll all pull the trigger, and they will all come up with their own devices, but they're always waiting for that. That one company to take the plunge and take a risk. And I mean, you can even point to smartphones for that, right? That's what Apple did. They develop smartphone, they pulled the trigger on it, and it worked out, but it could very well have just completely failed as well.

R Ryan Fleury 1:01:19

Well, and I think something we've mentioned on previous shows over the past number of years, is that sometimes the simple tech is the best tech. The white cane is better than any haptic best haptic shoes, you know haptic wristband for mobility than anything else. Right? Guide dogs get sick. Guide Dogs are great. I had a guide dog loved my guide dog, nothing like traveling with a guide dog. But they come with issues. My cane is, sturdy, my cane is reliable. But it's simple tech, right? So sometimes simple is best.

R Rob Mineault 1:01:55

Sure, but I mean if but if you had a a cane that could read your sweat and tell you what vitamins you needed for the day and talks to you and gave you the news while you were out tapping. You know what that might be? That might be pretty cool, too.

R Ryan Fleury 1:02:13

You know what, my Apple watch battery doesn't last more than two days. How long is it? You're gonna have they got to improve battery technology first before any of that happens.

R Rob Mineault 1:02:21

I'm sure they're working on that too. That's a good point. And you know, we should have asked him a little bit about haptics because I am curious about where haptics are, because I really do feel like haptics is something that they've been trying for a while, and then just haven't been able to get it to work. And I don't know if they ever are like, I just don't know.

R Ryan Fleury 1:02:38

Well, and I'm sure it works for some people. But not everybody. Anyways.

R Rob Mineault 1:02:44

No, that's fascinating stuff. You know, the other thing, the other component to that, that I find fascinating. And we talked about this on a past episode, and I didn't really bring it up, because I didn't think it was really his space. But I would really be curious to know, where, who's working on the ethics of all this technology, like, you know, we have all these startups that are working on this technology, working on products for it and working on things like say, for example, the example that, that he brought up the maybe think about this was the, what did he call it the designer genes?

R Ryan Fleury 1:03:21

I did try to go in that direction a little bit when I talked about, you know, people with disabilities, some of us don't want to be cured. Some do you want to be cured? You know, who who's working on the ethics? Or who's deciding the ethics behind some of this technology? And are they communicating with the disability community is engaging with them?

R Rob Mineault 1:03:40

I mean, that's still an individual choice, like if you don't want your blindness cured, then don't you know, you wouldn't have to. But when you're talking about going in and editing genes jeans, like, I feel like there's going to be pushback on for sure. People aren't necessarily going to be comfortable with that.

R Ryan Fleury 1:04:04

We're getting pushback with vaccinations on COVID

R Rob Mineault 1:04:10

So I guess what I'm curious about is, is that at that stage, do they do they take that stuff into account? Or it's just like, they're just working on the technology? Like, what, what people do with it, or what companies then take that technology, and how they they develop and market their product that's kind of up to them. So it's, it falls to them to come up with the exit? Like, it's just it would be interesting to know, like, Where, where ethics do start to come into question, or even Heck, even take the woolly mammoth example. You know, who's looking at that and going well, I don't know, is that a good idea? Is that is that an ethical idea? I mean, I hate to quote movies, but like, look at Jurassic Park, and then, you know, Jeff Goldblum, his characters saying, you know, you've spent so much time

figuring out how to do something he didn't ask yourself the question on Whether you should or not, right? Yeah. So that's, that's really interesting to, to me, we should have like some sort of a futurist ethics person, on some time to talk about some of that stuff. I know we've had somebody like that on in the past. But it'd be it'd be interesting to revisit that because I find that a really fascinating discussion in terms of, of like speculative technology and because it really it does get into like, when you're talking about augmenting people. And there's a price point behind that, well, then you run into well, then rich people are going to be augmented, and poor people aren't. And then you've got this weird class imbalance, not only a class imbalance, but you've got a what it is to be a human imbalance, right? And that's going to could cause all kinds of societal problems or AI, like, Is there a cap on what we're doing with AI?

R Ryan Fleury 1:05:54
Well, I think there is right, I started with human intervention and human programming and human intelligence. And a AI is at the point now where it learns and teaches itself.

R Rob Mineault 1:06:04
Yeah. So it could get terrifying.

R Ryan Fleury 1:06:10
Exactly.

R Rob Mineault 1:06:10
Right. So you know, it's, it makes me really curious to know, like, who's who's who's thinking about it? Yeah, who's thinking about those issues? Because I don't know that it's necessarily startups, or venture capitalists, because, you know, they, they want to develop this technology, so they can build a marketable product to make money. And that's fair enough. I mean, that's how our society is built. Nothing wrong with that. That's why we have smartphones. That's why we have the internet. You know, I don't mean to poopoo any of that. But the same time some of this technology is a little scary, because there are some far reaching I think, ethical implications of it that hopefully somebody is looking at.

R Ryan Fleury 1:06:53
Alright, well, let's do some research. See if we can find a guest to bring on the show.

R Rob Mineault 1:06:57
Hey, Ryan

R Ryan Fleury 1:06:58
Rob.

R Rob Mineault 1:07:00
Where can people find us?

R Ryan Fleury 1:07:02
They can find us atbanter.com

R Rob Mineault 1:07:06
they can also drop us an email if they so desire at cowbell@atbanter.com

R Ryan Fleury 1:07:13
And they can find us on Instagram, Facebook and Twitter.

R Rob Mineault 1:07:19
Oh, yeah, Steve's not here. So I guess I got to do this next part. Hey, you can also find us on social media, like Facebook, Instagram and Twitter

R Ryan Fleury 1:07:28
I already said all that.

R Rob Mineault 1:07:30
It must be the end of the day.

R Ryan Fleury 1:07:37
So that's going to about do it for this week

R **Rob Mineault** 1:07:40
That's very funny.

R **Ryan Fleury** 1:07:44
I am Rob Mineault

R **Rob Mineault** 1:07:46
You can't go away, Steve. It throws the whole show off. Yeah, well, that is gonna do it for us this week. Thanks, everybody, for listening in. Big thanks, of course to Steve Hoffman. And we will see everybody next week.

R **Ryan Fleury** 1:08:07
Bye.