POD OF JAKE
#156 - JAKE ADLER
AI-GENERATED TRANSCRIPT

Jake 00:16
Thank you, Jake, for coming on the podcast today, I appreciate you taking the time you're a 19 year old teal fellow and founder currently working on pilgrim labs, we connected on Twitter, you're working on a sleep product at the time. And now I think you're working on a little something different. But I think if you're not the youngest one to be on the podcast so far, definitely one of the youngest. And I think you've got a really bright future ahead of you've already built tons of projects throughout high school. And even before that, so pretty cool to be able to connect. And looking forward to the conversation, I think, you know, before we dig deep in any one particular thing, for those who don't know, you'd be great to get your origin story from sort of Israelis, you're going to start to where you are today and talk about some of the decisions you made along the way.

Jake Adler 00:59
So, you know, I grew up in Toronto, Canada, my, my mom was Israeli, and my dad was Canadian. And, you know, I was raised alongside a few other siblings, and they're all older than me. So I don't know, if you have any siblings, I'm sure some people in the audience do. But, you know, there really wasn't any, like peace or quiet in the house growing up, it was just pure chaos. And, you know, from a pretty young age, like I could engage in the chaos, but, you know, sometimes I would kind of just retreat, like, into my own brain. And, you know, growing up that at least, you know, in my earlier years, that was, like, really only my real refuge. But when I was about, like, six years old, my, my dad, you know, he, he had a really good idea of the trajectory of personal computing, and the role it would play in my life. And he thought it would be, you know, a good idea to buy me a MacBook. So, you know, I got my first computer when I was about six. And, you know, being a six year old, with a computer, there really isn't, there really isn't a clear, or first thing to do, it kind of just seemed like an endless void. So, you know, I just like downloaded steam, and played a bit of RuneScape. And that kind of, like, introduced me, I guess, into gaming, which is still, you know, a big part of my life today. But, you know, over the years after being first introduced to the MacBook, I think that really just opened up this portal to, you know, just new and emerging technology. So, when I was about nine years old, I convinced my dad to buy me the the iPod Nano,

it was like, that's, that's square iPod. And I remember like taking like a tape, and like, like an old walk bracelet, and like slapping the iPod Nano onto my wrist. So I could like change my music while I was on the go. And really, that was like my first experience ever, with like, a wearable computing device. You know, I grew up being a, you know, a big sci fi reader. So I was obsessed with Asimov. And, you know, my favorite show to the state is Futurama. So you know, risk reward communication devices and computers were, you know, something that, to me were pure fantasy, like science fiction. And then seeing it abstract into reality without initial iPod Nano, kind of opened up another door for me to explore. And, you know, over the years, I tried to really get a hold of any wearable devices, I could, but of course, the challenge was money. So my parents divorced, when I believe I was about eight or nine years old, like 2011, or 12. And, you know, effectively, after that point, finances, you know, became, you know, more of a concern in terms of, you know, me being able to buy these technologies. So, in 2012, you know, this would have been, you know, in the earlier days of Minecraft, and, you know, I'm not, I don't, I got this like ambassador for headshots today. But this is like version 1.1 or 1.25. You know, this was what, you know, the kids in my grade, like, I had to provide technical support to them, because they didn't really understand, you know, how to, like, download Minecraft or Skype. I got introduced to Minecraft by my brother. And I decided I was going to create like this class Minecraft server. So I could start paying for these wearables that I wanted to test. And, effectively, you know, I started the server, and it was a really bad business model. People used to come up to me and I would just like ask for like, a specific rank, like, if there would be like a rock or a night or Bishop, whatever. And I would just give them different prices. You know, at some points, I was collecting, like, $50 to like $30 for a rank. And, you know, it was initially very profitable, you know, the operation went very well. And then I later learned that these kids, you know, I guess I didn't really think about it, but these kids were, you know, 910 year olds, they really didn't have $50 to spend on a rank. So they would go home to their parents and tell them that it was money for lunch or for like a school trip. So wants to parents got wind that it wasn't, you know, for those purposes, I was forced to give the money back. But, you know, I was fortunate that I was able to get some wearables before that happened. And really the obsession with

these different wearable devices, you know, I was fortunate to get the Apple Watch Series zero and then play around with Garmins and Fitbits. And a few pebbles was, I would buy them, and I would try them out for like, the first month, and then I would tear, like completely tear them apart. And I had no clue what I was doing, you know, I was using like the back end of like a metal roller and like a hairdryer, like get rid of the adhesive. But, you know, I kind of just kept collecting the circuit boards, because I was just so fascinated how, you know, this individual component, like a green LED, and a photodiode, would be able to monitor heart rate. But that just seemed like such an abstract concept to me. And, you know, that kind of led into this whole, you know, obsession around wearable computing from a very young age. And in 2014, there was this Kickstarter campaign for a device called Muse. It is from a company in Toronto called Drax on. And it to me, you know, to my knowledge, at the time, was the first consumer oriented brain computer interface. So it was a device that would monitor your brain activity and score a meditation session. And I was, like, 11. So meditation wasn't a very salient or very immediate concern for me. But what was the developer SDK that Muse had? So basically, using the Muse device, you'd be able to control, you know, web apps, using, you know, specific signals that you train it on, like eye blinks. So, you know, I convinced my dad for Christmas to participate in the Kickstarter campaign, and I got the Muse device, and started building out applications like that, you know, like, controlling the dyno game on chrome look, if you go offline, using your eyes, and, you know, Muse, at the time, you know, was using, I believe, conductive ink, as the electrodes, so, you know, the signal quality was really poor, but I was able to build out like a few web apps around it. And that progressively led into some of the later work that I did with the generosity crowd. So in like, 2018, or 19, I believe, you know, I reached out to this company called generosity, which is, you know, a startup that was developing or is developing, you know, a non pharmacological or non drug based intervention for clinical for for ADHD. And effectively, you know, I reached out to the, to the founder, and do devices for like, $1,100. And this would have been in like grade 10, or 11. And I was broke, I couldn't afford, you know, an $1,100 brain computer interface. So I reached out to the founder, initially tried out their emulator, and then kind of told him about some of the applications I wanted to build. And, you know, I'm

incredibly grateful, because he actually sent me like, two of their crowns, like two of their devices for free. And I started building out like, advanced human machine teaming applications. So, you know, controlling my Spotify and controlling my Nanoleaf, using my brain, and really, you know, about halfway through my time, kind of playing around with the crown, you know, I participated in this hackathon, where we were kind of coming up with ideas for, you know, novel brain computer interfaces. And in that hackathon, you know, on, you know, very primitive, like primitive level, one of them we had was building, you know, a neuromodulation device for treating clinical insomnia. And, you know, it seemed like a interesting concern, but something that didn't really affect me.

08:25
But that kind of changed a few months later, when I found out that, you know, both my parents, I've been, you know, longtime users of sleeping pills, and tents, and they tend to, you know, in the past, I've used certain pills in a more excessive manner than what would be recommended. And that has led to, you know, when I was growing up certain events to occur, that I never really had an explanation for, until, you know, I found out that it was because of sleeping pills. So, you know, with that, you know, personal motivation. And, you know, with the knowledge of how these technologies fundamentally worked, I kind of just challenged and said, like, is it possible to build out, you know, a non pharmacological intervention for treating clinical insomnia. And, you know, spent a few months just conducting really as much research as I could, I really had to hold myself back. You know, I think when you're, you know, when you're young, you intuitively want to like jump right into it, but I want to make sure I had, you know, the proper understanding of the existing literature before you decided to try and pursue this one approach. And, you know, read likely around two or 300 research papers at the time, and now that numbers like 2000, but started this company called the sleep that was basically in my grade 12 year, and, you know, I signed my first angel check on my birthday on June 6, it was from Cory Levy, and then we proceeded to raise like another 150,000. It ended up being around 275,000 For our initial round, and we have participation from you know, the founder of Casper like the mattress company. Ben Pasternak, like the founder simulate Cory levy Purina holdings, so the LPs are like the founder of

Shutterstock and Mrs. Market, so really cool people. And we were developing, and we kind of still are developing a sleeping mask that directly induces and improves sleep to treat clinical insomnia. So it's intended to act as an alternative intervention. It's also entirely closed loop. So it's personalized to the individual. And, you know, in real time, we're monitoring sleep stages, neural activity, heart rate, you know, basically the nine yards of vitals to optimize, you know, treatment in real time to each individual patient. And effectively, you know, I was working on that for really, the first eight months. And then back in January, you know, I was, I was in Miami, and Miami hack week, and I was speaking with an individual who, you know, has previously worked with the CIA, through defense, contracting, and other opportunities. And I told him a little bit about what we were working on. And you recommend that he goes, like, look, I think you should speak to the DOD and the Defense Innovation Unit, or to diu. And, to me defense, you know, I had this idea that maybe defense could be a viable approach down the road, but definitely not something that, you know, we would be pursuing immediately. But as I look deeper down the rabbit hole of defense, I recognized that it was far more feasible for us to become a defense company than to become a consumer oriented company. And that was just for a few reasons. First of all, you know, the FDA is, is completely overwhelmed right now, which has led to, you know, an under regulation of the industry, and that has led to, you know, a lot of these devices that aren't being properly tested for safety and efficacy, being released on Kickstarter, and trying to, you know, circumvent the FDA, which makes it really challenging because it creates a lot of noise, that would be tricky for us to kind of get through in terms of penetration with the signal. So you know, having that one customer in who would like to be, you know, the DoD would kind of help us avoid all of that other noise. A big proponent to that as well, is the fact that private investors generally dislike backing companies that want to work with the FDA, you know, they see the FDA as really a big mean, you know, monster, and to me, it's much more of a necessary evil, you know, pursuing a relationship with the FDA, you know, from the beginning of building new sleep, to me was really the steps to ensure that there was longevity in the company, because like I said, you know, the FDA is overwhelmed, they don't have enough resources to send out enforcement letters to, you know, these small startups, but they have

enough to send it out to, you know, those that hit 100 million in valuation, because it allows them to make a proper return. And then maybe on, you know, a slightly more selfish note, I recognize that some of the technologies that I was, you know, keen to work on and develop, would likely be outside of, you know, the immediate consumer interest. So, you know, to me, working with the DoD kind of opened up this new door, and this new route, and, you know, growing up as well, you know, reading a lot of sci fi, you know, reading a lot of, you know, cyber and bio punk, effectively, you know, I, I hit this point as well, where I recognize that if you're looking at, you know, how these cyber punks are portrayed. And this is slightly abstract, but, you know, it tends to be like this for wealthy and society that's controlled by a single corporate entity that favors the rich, and, you know, inherently by kind of changing the approach and working closely with the government, from the beginning, ideally would, you know, keep us away from this dystopian future, and really enable this technology to eventually hit mass adoption, without being, you know, distorted or without being alienated from, you know, the general market. So, you know, what that basically defense was on my brain, I wanted to evaluate the budgets and, and make sure that this would be a viable business, and basically look through fiscal year 20, for the entire DoD budget for rdta versus research, development, test and evaluation. And there was about $6.37 billion allocated, and directly salient to the technology that we were working on. So, you know, I immediately recognized that there was, you know, a defined, you know, market size for our specific technology, you know, incentives for us to work alongside the DOD, not only for, you know, experiment, developing experimental and novel technologies, but also for our relationship with the FDA. And additionally, you know, there was this final factor that happened when I came back home to Toronto, and had a conversation with a family member who served in the IDF about some of the technology that we were developing. And, you know, it was clear that, you know, once I expressed that we're kind of making this transition over to defense, you know, he suffered from a fatigue related injury, that this was the right move for us. And something that I personally felt would, would really be the next step for for us. And about three or four months back, we made the transition to pilgrim we rebranded the company, I'm happy to talk about why we chose to name pilgrim as well, but we rebranded and kind of shifted our vision. So we moved

away from building you know, this novel sleep aid to developing advanced biological interfaces that can restore and enhance warfighter capabilities. Our primary focus is really on to three critical dimensions of ground warfare, which include legality, resilience, and readiness. And effectively, you know, we've been experimenting with a few interfaces, and developing out some novel technologies for the US government and a few allied governments as well.

Jake 15:16
Great, well, I appreciate the story. It's super interesting. And obviously your, you know, your passion and obsession with wearables, and, you know, the personal tie in with sleep and everything like that is super evident. So it's no surprise, you know, what you're working on today? Can you talk a little bit before we get into pilgrim about what new sleep was actually going to do differently than like, everything else on the market, we've obviously got, you know, everyone's got aura rings, and, you know, the whoop band and the Apple Watch, and the Eight Sleep bed, and none of these are doing anything to you physically, arguably, I guess the Eight Sleep bed is changing the temperature of your bed. So there's some sort of like physical component there. Everything else is just sort of like tracking and through measurement, you know, what gets measured gets managed, you can sort of improve your sleep or your habits, you know, with the whoop, or the Apple Watch, or with aura around general health, as well as some of the concepts that it sounds like you're working on more now with pilgrim around readiness and, and things like that, but purely on sleep, like what's the current state of the market? And do you have confidence, despite the pivot that the sort of lane that you were going down on the sleep wearables track, is going to be a track that sort of succeeds in the near term?

16:41
It's a valid question. You know, with new sleep, our goal was, like I said, to develop, you know, a non pharmacological alternative. So something that would be as efficacious, and potentially more safe than the existing drugs. So whether we're talking C drugs or the benzodiazepine class, ideally, the solution would be, you know, fitting for individuals who were suffering from clinical insomnia, primary or secondary, and could actually treat the disorder. Really

the approach with new sleep, unlike, you know, many of the existing wearables like I'm wearing a whoop right now, you know, was the fact that new sleep was intended to move beyond, you know, this, this supplementation and move to this world of enhancement or amplification. And in terms of supplementation, I'm not referring to like melatonin, or GABA, I'm more so referring to the supplementation of data. So, you know, these wearable devices as of today are incredible resources, because they provide us with insight. And, you know, tracking data enables us to actually potentially optimize, you know, our sleep and our schedules. The concern is that the data isn't really that actionable. And it also isn't implemented in real time. So treatment tends to be somewhat non existent with the existing Wearable Solutions. So the intention with new sleep was to kind of capture both of those domains. So it'd be able to monitor the body in real time, such as your current sleep stage, your heart rate, the oxygen saturation in your blood, bloodstream, your skin temperature, and based off of those specific vitals, be able to actually adjust treatment in real time to put you into a state of sleep, or potentially help you maintain that state of sleep. Specifically, what nusach was doing was using, and still is, since using electrical stimulation, to influence the deep brain regions, the actual specific neurophysiological mechanisms that are involved with Sleep Induction. So it effectively puts the individual into a state of sequester, I can't talk much about the specific effects because that would be making a marketing claim. But it is intended to treat clinical insomnia. And the existing peer reviewed evidence prove that it was more effective around three to nine times more effective than existing pharmacological approaches. So really, the approach was trying to capture kind of both sides of that wearable market. I think a sleep is a cool company, I think Matteo has done really well with building out the business. The challenge with building a company like a sleep, and even building new sleep in the consumer oriented space, is that my wearable devices are becoming a prominent feature in modern society. There's still relatively obscure, you know, I know a lot of older individuals that suffer from really severe clinical insomnia, and don't use any wearables to track their sleep. Right. So getting involved with these types of technologies, especially, you know, novel and experimental ones, is kind of a offshoot, and potentially, you know, a challenging endeavor. And I think Matteo has nailed it because

sleeping on a mattress is using their product. The challenge is that people aren't always aren't always sensitive to temperature changes. So some people might just naturally see hot and an HCP just isn't as functional as it should be. So I think there, there really is, implications and challenges on on, you know, really all the ends of the market, but the tech will likely be a massive market in the future. I think sleep is really one of those, those domains where you know, you have very little control, you know, when you go to the gym and when you exercise, you can choose what way you want to lift, but you don't really get to choose, you know your sleep architecture. or just equality, you kind of just take a gamble. Right? So there really is this, this opportunity to develop novel solutions, but I really think it's just gonna take some time before it's ready for the consumer market.

Jake 20:13
Yeah, that all makes sense. I want to also go back to a bit in your story where you're talking about, like, when you were first, you know, getting involved with the, you know, you take the the Nano to your wrist, and then you started, you know, I think with the muse, you said it was the meditation hardware, you started to sort of see how, you know, simple, you know, brain computer interface stuff might work and started, like, messing with, you know, that category. And you're talking about, like, controlling, can you just explain a little because most people aren't really accustomed to like, obviously, like most people, I think, even in and around tech, that kind of, like, they know, you know, about neural link that Elon is building. And, you know, they're familiar with the general concept of like, okay, maybe at some point, we can connect, you know, brains to computers and become super smart, or, you know, whatever it might be, but they're not really familiar with, like active things that are available today that are workable, and you were talking about, like controlling games with your eyes or something like this, can you explain, like, the edges that you've been to, in playing around with these sorts of things?

21:21
Yeah, neurotech is, is definitely, you know, like I said, they're relatively obscure for the consumer market, there is quite an array of

devices that are readily readily accessible for, you know, just everyday individuals. And, you know, Muse is, is obviously one of the bigger companies that have established themselves, its muse or interacts on at this point. And, you know, they have a few devices, some of them are for sleep tracking, using like, some additional auditory stem to try and help out with falling asleep, which is really any different than just putting like a speaker close to your ear, but point is music, this and then you also will have other solutions, you'll have neuropathy, like I mentioned, another great company, which is basically uses what they call neuro audio. So it monitors your brainwaves like your your brain activity, and tries to adjust the audio to help you attain a state of focus. And then outside of that, you know, there really is just a lot of new companies that are emerging every single day. Frankly, the challenge is really keeping track of the ones that are in, you know, that are still operating and those that are now defunct, but you know, there is really quite an array, I found, you know, generally that if you're looking for products that, you know, won't be, you know, regulated by the FDA, not because they shouldn't be, but because the companies don't want to work with the FDA, good sources, like Kickstarter or Indiegogo, there's a lot of new neural interfaces there. But just as a general point, and just you know, a little bit of explanation for you know, that wider population neural link and what Elon is working on, is a invasive solution. So it's what would be referred to as like a neural implant, it would be physically inserted into the brain and touching like these electrodes, which are effectively you can think of like mini wires to individual neurons. There kind of exists like a spectrum of invasive like invasiveness, you have things like EEG, which would be completely non invasive, say, for everyday individuals to use without, you know, a medical professional, all the way up to things like neuro link, which are heavily invasive, along with like deep brain stimulation, which is really the most invasive neural implant that we have today. But really anything that uses EEG, fMRI, Rinnai, for easier engineers, so functional near infrared photography. So basically monitoring the changes in hemoglobin concentration around the blank in the brain to determine oxygenation would also be non invasive. If you're interested in solutions like that, Mende is a good company as well. And then there's a lot of other existing companies in this space that are working on neuromodulation devices. So devices

that can actually apply electrical stimulation to the brain and to the peripheral nervous system. I won't recommend any of those companies because that is a clinical intervention. And they should be working with the FDA and they're not. But if you're interested, I encourage you to explore them yourselves.

Jake 24:09
But so maybe we can now shift to pilgrim I'm what you're working on. Now. I understand. There's a lot of cool stuff. I'm not sure how much of it you can talk about or that you'd like to talk about at this point. But the theme is basically these Advanced Biological interfaces to restore and enhance warfighter capabilities. And that's like, that sounds great. But it's a bit abstract to understand what what's actually the focus there. Is it something in the realm of like aura and whoop, is it something that's much more like what we're talking about now where there's some sort of brain computer interface going on, you know, non invasive or invasive or whatever it might be? Can you just sort of like, lay out the broad strokes to the extent that you can have of what you guys are working on at pilgrim and actually, I'm Carrie If the background on the name as well,

25:03
yeah. So we'd all just the first point, but, you know, Pilgrim is really a evolution of new sake, it's fundamentally grounded in disbelief that wearables should move beyond just supplementing you with data, and effectively use that data in real time to treat, you know, a biological inefficiency or disorder. So our approach a pilgrim is, would be, would be not aligned with companies like aura, or whoop, in the sense that they're just tracking vitals and displaying data, you know, we effectively are actively deploying that data in real time to treat that specific condition. So, you know, the primary targets, and I'm happy to talk about these that we've been focused on, has remained, you know, like I said, those three dimensions of warfare, which are Tality, resilience, their survivability and readiness on the readiness point, you know, we're still pushing the new suit device, there is, you know, immediate and demand and salient demand for that technology. You know, the reality is that these war fighters are sleeping in incredibly austere conditions, you know, on top of each other, under vehicles, in moving vehicles, you know, the quality of

sleep, and the norms around sleep within the DOD are incredibly poor. You know, it's expected to sleep like five to six hours per night, you know, roughly, I think 67% of the active military population inhibits symptoms of clinical insomnia. And, you know, between the Iraq War, and again, the Afghanistan war, you know, the Iraq War and deployment in Afghanistan, there was like a 653% increase in recorded clinical insomnia cases. So the treatment of insomnia is a, you know, an immediate need within the DOD, especially given the restrictive use of some existing pharmacological aids, like benzodiazepines and sea pills, given, you know, the effects they have on, you know, vigilant attention, hand eye coordination, they really just aren't great solutions. And then on the other side, I'm happy to talk about this as well. But what we've been actively exploring is accelerated healing technologies. So effectively, ways to accelerate the pace at which a wound closes. So kickstarting hemostasis, which is the blood clotting process, along with angiogenesis, or the creation of new blood vessels, and then some addition of infection prevention to enable a wound to heal far faster than it would naturally. And you know, some of the approaches that we've been evaluating have been able to deposit collagen, which is critical for wound closure, arrayed about like three times faster than natural, and effectively, you know, it's the difference between, you know, a 30 day recovery time and attend a recovery time for severe wounds. So there's really interesting applications. But really, the goal is to really push the limits of what is possible in terms of biological interfaces, and really, you know, enable humanity. And, you know, trying to avoid using grandiose language, but really enable humanity to move to this new level of capabilities. And in regards to pilgrim like the naming, you know, there was quite a, there's, quite frankly, a few reasons why we decided to move forward with that name. You know, first of all, I recognized pretty early on that this journey was going to be relatively long and arduous. And you know, that can be comparable in some ways to a pilgrimage. But, you know, growing up my favorite book was Slaughterhouse Five by Kurt Vonnegut. And the primary character's name is Billy Pilgrim. And the story kind of, depicts this, it's really a nod to Pilgrims Progress and other novel by John Bunyan. But really, it depicts the story from like, sin, to salvation and innocence. And, you know, in in another way, you know, the pilgrims, really their entire, the entire journey that they went on a Puritans

were moving away from religious dogma at the Catholic Church, to America, in hopes of advancement and progression. And it really felt like that's where we are at right now with the DOD. It's just defense primes. And now we have startups that are largely focused on autonomous systems. So this really opened, you know, this new window for for us to advance, you know, how wars are fundamentally fought. And, to me, pilgrim was a fitting name for that. And then, you know, on top of that, pilgrim, you know, the Pilgrims really played and still, you know, to me are a very solid foundation of the American ideals that make the country so great. Freedom and Liberty. And, you know, they have had, you know, a rough history, I think there is, you know, various depictions of, of the events that occurred. But I think regardless, you know, they, they had hope, and they really wanted to push the narrative for what's possible for the United States. And that's really how I feel as well.

Jake 29:55
Interesting, yeah, both on what you're doing with the company and the naming as well. It seems like you've done have been extremely thoughtful and deliberate about really, most of what you've done in, you know, these, this early chapter of life and whether it's, you know, deciding what you want to work on, or how to name that project. So it's really cool to see a further question on pilgrim you guys have made a conscious decision to focus on warfighters and their capabilities as opposed to something like autonomous weapons or weapon development and, and something like that. Can you describe a little bit? What went into that decision making process while you've gone in the direction that you have?

30:37
Yeah, so, you know, fundamentally, this belief around, you know, autonomous weapons systems, or really the, the use of machines in warfare, you know, it isn't really new. It's been really around since the 40s. And, you know, it's kind of spurred up through different points in history. You know, a good example of this is back in August 6 1944, so like, two months AFTER D DAY, or the invasion of Normandy, you know, effectively, this, it became such a fallacy where we overestimated the capabilities of machines, specifically armored systems at the time, were, you know, on that day, so when, you know,

like, the hundreds of individuals were being killed, hundreds of allied forces were being killed in World War Two, you know, we had a single riflemen in reserves, so like a single human to replace, you know, the hundreds that were dying. And, you know, along side, you know, disbelief has been the fact that wars, you know, are fundamentally fought by humans when they come face to face. And that's, you know, not just my sentiment, but one that was, you know, shared throughout history, from, you know, great military historians, like SLA Marshall, all the way up now to more contemporary thinkers, like Mark Melia who just kind of stepped down as the the former Joint Chief of Staff, the director, Chairman, rather, but point is, you know, our approach is, is effectively trying to really manipulate and improve warfighter capabilities. To me, really, the fundamental force here is at the crux of conflict resolution is in ground warfare. And really, this is a sentiment that's, you know, further evidenced by, you know, just the Army's modernization strategies. So, if you're looking at where the army is trying to go in the next 10 years, like 2030, and beyond, you know, they're moving away from Brigade Combat Teams, which are composed of three to 5000 units, or soldiers to about, you know, divisions which are 10 to 15,000 troops. And, you know, just transition isn't purely just about the numbers. It's really the recognition, like I said that, you know, aerial and naval autonomous systems, so things that are being developed by great companies like on drill, and ceramic. While these are great solutions, they simply complement ground warfare, like they kind of act as this external factor that augments, you know, operational awareness, or positioning, but don't actually affect how words are properly conducted, or how they're resolved. And to me, you know, what's necessary is, you know, addressing the largest vulnerability in our existing defense apparatus, which is the warfighters, especially given the fact that they are, you know, our most prized possession, as ground warfare tends to be, you know, the most critical aspect of how, like I said, wars are addressed. So for us, a pilgrim, really, the next phase is developing out these technologies, these biological interfaces, that would enable, you know, these warfighters to, to navigate modern conflicts, and then also, you know, command the wars of the future, you know, providing us with this overmatch, over any adversarial or over really any adversary in regards to, you know, physiological or neurobiological warfare as well. So, really, the long

term vision for the company, you know, like I said, it's, it's really bringing these technologies to warfighters. But eventually, you know, with time, when things become more accessible in terms of when we can help fast we can manufacture them, and really, the cost behind each individual interface is bringing them back to the consumer market with mass adoption. So that's really the intention, and really, why you know, warfighters are, to me, you know, the next step. And then, you know, just as a final point, no, one of the movies I watched growing up, and it's crazy that most people haven't seen it is 2001 Space Odyssey by Arthur C. Clarke. And I won't spoil the movie, but, you know, really, it's, it's, it's this journey. And it's a story about, you know, the evolution of humanity, and includes, you know, the progression through the use of, you know, artificial general intelligence, and really how humanity overcomes it to really transform into this next evolution of capabilities and what they refer to as like a star boy. And to me, you know, there was this incident in in grade seven, where, you know, I went to, like a science fair and I spoke to a panel of judges, and asked you know, about the looming AI singularity event and that's where, you know, general intelligence or artificial intelligence would would supersede See, you know, human intelligence and, and kind of create, like this existential threat that would, you know, potentially kill humanity. And, you know, he basically responded with the fact that, you know, he believed that the human brain will persevere. And, you know, we're are inherently a scrappy, you know, brace of organisms that will, will try and do everything we can to, you know, overcome, you know, our limitations. And I think that really played into some of the early philosophy of what we're building at Pilgrim is like, really, like how do we kind of create, or enable humanity to move beyond and ensure that we can maintain our superiority with some of the threats that are created with the rise of AGI. And to me, you know, I really do hope that the future kind of resonates and falls in line with what Arthur C Clarke imagined, where we recognize that AGI, you know, had the significance and, and could potentially provide, you know, this, this new world of capabilities, but the reality is that, you know, without sounding speciesist, as a human race, that we need to overcome that, and we need to kind of move to this new world of what we are inherently capable of. And to do that, that starts with, you know, not only upgrading the environment around us, like what Andrea and Saronic, or

even Apple does for the consumer population, but starting to inherently, you know, and move to upgrade ourselves. And I think that is, you know, a big proponent to the long term vision at pilgrim

Jake 36:23
switching gears a little bit, you wrote a piece on medium, I think blog in 2021, on sort of the issues with the current sort of formal education system, traditional education system, you know, grade school, high school, college and all that. And, you know, you referenced some resources for people who might be interested in like, dropping out or pursuing another system, to fellowship, 1517 fund, you know, I've had both the founders, Michael and Danielle from 1517, on the podcast before I recommend people go listen to those episodes, if they're at all interested. But you're now a teal fellow yourself, two years later, after writing that piece, at some point along, you know, in between there you applied and, you know, they chose you. So, to the extent that you can share love, just sort of hear that story, you're sort of parallel path to the traditional education system? And, you know, how's it how's it gone? With the fellowship so far?

37:23
Yeah, you know, I think the fellowship took a really big bet. And, you know, I'm very, I'm very grateful, you know, some of the advisors I had, who have been involved with the fellowship in the past told me that, you know, I likely wouldn't have gotten it, just based off of what their selection criteria was. But, you know, coming out of high school, you know, my, my grade 11, one of my final years, you know, I was entirely remote, you know, I was in this condition. And, you know, I wasn't able really to see anyone, because, you know, I had, you know, individuals at home who had, or, if they got sick, it would have would have been a serious concern. And it was very isolating. And, you know, during that time, I'm fortunate, you know, just like earlier on in my childhood, that I could really resort to technology, it really like technology, from an from a young age really was like this younger brother, it'd be kind of like a supporting factor that could kind of like, always cheer you up a little bit when, when things got rough. And, you know, during that time, like, that was 2020 2021, I really just thought how far I could go. You know, I think most people associate, you know, these many professions in life, like with this,

like invisible wall, like I have to go to obtain my Bachelor's degree, they have to go to obtain a master's or a graduate. And that's not entirely true. I think there, obviously, are some questions that are driven by, you know, experienced and empirical evidence, but generally, I found that, you know, in most cases, I've seen young individuals up until that point, you know, working on some of the most batshit crazy ideas, and, you know, clearly for lack of a bachelor's degree wasn't stopping them from doing that. So really, my question is, with the fellowship, you know, I wanted to become a fellow from, you know, the moment I first learned about it, to me, you know, I really saw it as, like, a path to like salvation, especially given that, you know, both my parents wanted me to go to university. And, you know, I first applied when I was in grade nine, and continuously apply for a few years on and off. And then basically, you know, after I started new sleep, I applied again, and was put into consideration. Um, there's a few interviews that happen, and I got word that I was, I was a fellow early this year, I believe, 20 out early this year, and I got, you know, I didn't take that I was very shocked. But, you know, the people I've been able to meet like the other fellows, just continued to blow my mind and the sheer knowledge that you see, it's such a young age, it's just, it's very inspiring. And it really to me, brides like this route for those that are inquisitive and curious and recognize that they can address and they can start working towards these real and hard problems from a young age, it provides them with an alternative path. Actually, recently, Brett, I'd caught he posted something on Twitter that I retweeted about, you know, if you're young, and you're interested in hardware, there really shouldn't be any factor stopping you from like teaching yourself, you know, PCB design, or the fundamentals of electrical engineering. And the unfortunate aspect is that in, in, in society today, that's kind of, you know, there's a lot more push than pull in that sense that, you know, a lot of kids I knew, and I grew up with, like, used to tell me, like, my friends used to tell me, like, why can't you just do like normal teenage stuff, and not like my parents, but like, my friends. So, you know, I think for those, like I said, that are curious, and, you know, are deeply interested and passionate about addressing, you know, a real goal. And on top of that, I would argue that, you know, becoming a teal fellow, at least, the teal fellows, I'm close with, the commonality is, you know, this deep sense of self awareness, I see

far too often, that a lot of the younger founders are potentially, you know, not as aware as they should be, you know, pursuing a startup or a business model does, doesn't really make a lot of sense. And obviously, that comes with experience, but it also just comes through conversations, just like being or allowing people to be critical of your approach, and really just iterating and not falling in love with your first product. Because that really, is really the only path to to progress into evolve. So yeah, I mean, I'd highly recommend, you know, applying for the teal fellowship, I'd highly also recommend if you're young, and you're looking for a bit of financing to work on a project, look into 1517, the teacher grant, I'm sure you guys talked about that on the podcast as well, it's just because I believe they're still offering, it's $1,000, it's a great source of initial funding that I wish I had when I was initially working with wearables. And, you know, I think the truth is that you really just have to be from young age, you're not going to have a lot of capital behind you, you know, some kids are able to raise, you know, 20 $30 million, I would highly, highly recommend that if you are young, and you want to build, you know, a hardware company, or you want to build something in deep tech, that you try and raise less than you actually need, because it will force you to teach yourself a lot, you know, the amount of information that, you know, I've been privy to, in the past year and a half, has completely altered how I see the world. So, you know, I would, I would say, try and raise less than you think you need, and really put more responsibility on yourself, because it will drive you to become, you know, they're driving you to develop a harder are and, you know, realistically, you know, a stronger work ethic, but it also, you know, help you develop out, you know, knowledge around, you know, these very obscure but relevant topics to whatever you're building. Such as, you know, my work with the FDA, and the some of the early work with the Department of Defense.

Jake 43:02
I think one thing that's always interesting, when you hear from people who are taking a very different path, or maybe sort of on a very accelerated path, like, you're here, you're, you're working on a company, you've worked on many other projects before, this clearly isn't like your first rodeo, just by the way that you're, you're speaking and stuff, even if it is maybe your first formal entity that

you're raising capital for, or whatever it might be. And it's interesting to hear, like, what people like that, you know, you can sort of get the broad strokes of how they're living very differently. But it's interesting actually to just like go into the day to day or like the hour to hour week to week like the smaller scale things that they're doing differently that you know, sort of like sum up to this larger way of living in a very different way. So I'm curious if you have any, you know, you talk about like self awareness and things like this any habits or routines or just things that you do on like a micro scale day in and day out week in and week out? That are very different from from most people that you think could have sort of an impact on on why you've been able to you know, why the teal fellowship for example, recognize something in you one thing that I could even just pull out of your story is you didn't get into the teal fellowship on your first try it sounds like you've applied at least I don't know three or four times so there's like clearly persistence there that I don't know what percentage of people who got rejected from to fellow apply a second time, let alone a third and a fourth. So that's like a characteristic, you know, one might take for granted. I particularly think persistence as far as I can tell, probably the single most correlated trait to extreme success. At least in business and you know, technology and stuff like that. So anyway, long I gave you a little bit of time maybe to think about it but curious sort of daily habits, routines, weekly stuff that that sets you apart. Just

44:59

addressing your final point, there is like a maxim that I keep very close to, like, whatever you want to call the soul. And somebody I've tried to question a lot in the past, but I haven't been able to break it yet is that with enough time? And with enough effort, like really practically anything is possible? I think, you know, and Elon will, will make the comment that within the defined laws of physics, and I think that makes sense. But I also think that the laws of physics are just as we understand them right now, but potentially with enough time, and with effort, we can redefine them. So, you know, the point is that, like you said, persistence is massive. In terms of general habits, I'm probably the wrong person to ask. You know, the reality is that to build a company like this, with, you know, how much, you know, we're just raising a bit more right now. But how much we initially

raised, means that really the, the person doing all the work is you. And if you're not working, then nothing has been done. So, you know, I've kind of fluctuated because of my background, there has been times in my life where I've gone to kind of both extremes where, you know, I, I have previously followed, like, Brian Johnson's blueprint, I've done about three times now. And I've also been on the other side of that, where I was getting two hours of sleep, you didn't McDonald's for every meal, or whatever, like shwarma, or whatever, you know, I could I could find, and just grinding and going, what some people would call like, de Gen. So really, in terms of habits, I don't really have many, I would say, waking up in the morning, and taking a shower tends to be pretty helpful. But outside of that, like, if you want to build a company, and it's, it's challenging, like you're trying to work on something that, you know, requires a lot of manpower, and will require a lot of effort and time, and the financing isn't there, or it's not there yet. I don't recommend you know, immediately choosing to raise more, I would recommend seeing how far you can kind of push it yourself. And really, that means pushing yourself to your limits. So really, if it requires you to work 14 or 15 hour days, like that's the necessity. And for some reason, that's an unpopular opinion, I don't really quite understand why or how it is. Because if you want to build something that's generational, it's going to require, you know, a significant amount of effort. And in these in those earlier stages, when you need to prove not only to these investors or to your customers, but to yourself, that it's worthy of your time, then you really need to be putting everything you have to make the company work. So in terms of just how I live my lifestyle, you know, I don't think I'm that healthy, you know, I tend to get really bad sleep, like four or five hours a night. And effectively all my other time is spent working, you know, in terms of just how, like my situation, you know, I'm I'm from Toronto, I'm living in Toronto right now. And you know, a lot of the kids I grew up with in my high school years have all gone off to university. So there really isn't much of a social circle here, which is great to get work done. Because it means that there really isn't much social interaction, besides just the people in our team. But really, I think that's what's necessary, you really have to be willing to sacrifice everything if you're, if you want to make it work. And if you're not, then I'd question if that's really what you want to work on. Because, you know, the dumbest thing I've ever heard.

And just a good nod to just a company, I think that's developing something great is a pipe dream, like my dream labs, the founders, Garrett, and, you know, through just conversations with some of their investors, you know, key, expressing these people expressed that, you know, Garrett told them upfront, you know, we're working on this for the next 10 years, it doesn't really matter whether, you know, this fails, or, you know, we face this sort of challenge, like, we're going to work our ass off to make this work. And it doesn't matter, whatever situations we face along the way. And that really needs to be the mentality. When you're building your company, I think it's fine to be skeptical. It's fine to be skeptical of what you're building, but you should really never feel immediately skeptical. And yourself. You should be able to evaluate and try and iterate on your mentality. But if you start thinking, like I'm not the right person to build this type of company, that that's probably a good indicator that you need to switch what you're working on.

Jake 49:29
Yeah, I think that's great. I mean, it's, you don't really need too many habits. And I didn't certainly intend to imply that you do. I think waking up and taking a shower and grinding every day is as as much different from how most people live as anything else that you could be doing habit wise. So well.

49:45
Yeah, what I want to say though, on top of that, is that like, don't just say, like, I think the worst is when I'm talking to founders and and they're like, you know, I've given up everything and I just work all day and I have no luck. I've, because intuitively, I just think like the fact that he's telling me this means that he's likely not doing it. He's just like trying to reaffirm himself or whatever themselves. To me. The reality is like, you'll meet a lot of people, especially in SF who are LARPing, like they're fully role playing. And they'll pretend that they work these crazy long hours. I recommend if you're young, and you're building a company, like I said, that's, you know, in deep tech, or hard tech, or something that's just inherently tricky. Go and live, go back home and live with your parents, I would, I would really advise against living in SF, I think there is this really big demand for the founders to live in San Francisco. But the

challenge is that the incentives and what you feel compelled to do in San Francisco is not right for what you need to be doing. You know, you kind of become incentivized your conversations to be pushing more and more people and going to parties, and especially hacker houses, which are, you know, a preeminent part of the SF culture are incredibly distracting, because it's either you deal with this hurdle that you're facing with your project, or I walk outside, and I have a group of five guy friends that I love talking to, and we can go grab a crepe together, right, like there's a clear difference in the dopamine. And your brain will tend to select, you know, the latter, just out of sheer imperative. But point is, you know, the reality is, if you are really committed and dedicated, isolate, and just work, and you don't need to reaffirm to other people that you're working those hours, just do it, and your execution will reflect how much you work. And in some parts, like I don't, we're still so early. So it's tricky for me to say this, but I think even in some of the early conversations I've had with, you know, other people, you know, it's clear that that was the doctor, but in those conversations, but the fellowship, the execution was what mattered, right, I didn't come to them and say, you know, I was, you know, working 40 hours or less. So they're like, working 18 hours a day. And that's what enabled me to do all of this, it was just clear that, you know, based off of, you know, my prior projects, and how far I was able to get with them in terms of execution, that that was the amount of effort that was required to get there. And that was what stood out as an indicator. So, again, working, I think working in public or building and public, it's interesting depends on the company. But if you're building something hard, and tricky, I would say build in silence for a bit, you can be public about what you're building, but don't like rely on external dopamine or telling other people how much you work, because that's just not gonna work for you.

Jake 52:33
Definitely a big difference between, you know, talking to talk and walking the walk. And to your point, walking the walk, when you're doing it is evident in the actual results. Basically, it's not like you need to be tracked for your full days or anything like that. I'm wrapping up here, because I know we're coming up on time. What do you expect of yourself of your team for the next, whatever period of time

makes sense to sort of project along? And, you know, just before we wrap up? Where can people go to sort of follow what you're doing? Or maybe there's no place right now, if you're just building in silence for the next while?

53:18
Yeah, I mean, if you want to follow along with what we're building, or even, you know, you're interested in, in my tweets, which are sometimes funny, but typically tend not to be, you could go to my Twitter, it's at digger Radler, not really active, but it's, sometimes when I have little moments of, of the, you know, when something good happens, maybe sometimes I'll publish or be a little bit more active on Twitter. But outside of that, you know, it's really tricky. You know, obviously, timelines are really tentative. And really, the philosophy and the approach with working in defense is, you know, being very sanguine. So, you know, trying to be realistic and slightly pessimistic about the process. But, you know, I think in the coming months, we will be a lot more transparent about the efficacy of our devices. So you can expect to see that pretty soon, along with some of our contracts that we are actively working on right now. So there'll be a lot more of a public presence in the coming months, just because, you know, it's somewhat out of necessity to build up the reputation around the company and the products that we build. But as for me, you know, I will likely just be in Toronto building for the next little bit until, you know, we we finalize this round and then, you know, probably maybe build out a small office in San Francisco. So that's really what I see as the next step for the company.

Jake 54:48
Awesome. Well, thanks Jake. It's been great having you on and your you know, sort of hunger and drive is is evident in the way that you speak about, you know, what you're doing and what you're building so great. talk with you and looking forward to following along with you and pilgrim and, you know seeing what the future holds but very optimistic. Thank you