# WE ARE ETH – Episode 22

# With Vincent Bédat, ETH Alumni and Mechanical Engineer

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[00:00:00] **Vincent Bédat:** **I think robotics has had a massive amount of success in industrial and manufacturing setting. But for a while now we've talked about robotics as like everything that it could do and I think people want to finally see some result. I think aside from like maybe your vacuum cleaner at home.They are incredibly helpful. It's right next to me and oh my god, I definitely needed it.**

[00:00:25] **Susan Kish:** In this episode, I talk to Vincent Bédat, who studied mechanical engineering at ETH Zurich, and now lives in San Francisco. Currently the technical product manager at Nimble Robotics. This is the we are ETH podcast, and I am Susan Kish, the host.

Vincent, how did you get interested in robotics? Did you play with a lot of Legos when you were small? What was the trigger for this?

[00:00:55] **Vincent Bédat:** Actually, yeah, I did Lego a lot and I always was fascinated with, creating my own thing, like being very hands-on in building something. ETH, I remember driving by as a kid, that building and since forever being like, this is where I'll go one at one point in my life in order to learn how to build those things. It has always been a dream to do those.

[00:01:21] **Susan Kish:** And did you grow up in Zurich?

[00:01:23] **Vincent Bédat:** I did, yes. I moved from the French part, as my name might suggest, I moved from the french part of Switzerland when I was around three years old, and then, grew up my whole life in Zurich,

[00:01:35] **Susan Kish:** So ETH was always in your destiny. I'm trying to imitate the voic from Star Wars: «in your destiny». ETH was always gonna be there?

[00:01:46] **Vincent Bédat:** Yes, always. I think that was always a plan and a beautiful execution afterwards.

[00:01:53] **Susan Kish:** I understand. you got a bachelor and master's in mechanical engineering and finished, what was it like to graduate or to go to school there in the 2010s?

[00:02:06] **Vincent Bédat:** It was very interesting coming in a space where, technically I had to dig so much deeper than I ever had before and really having people around me that were pushing me to really, yeah, go into the most technical things, that I ever had to.

[00:02:28] **Susan Kish:** What's an example? What do you, when you say technical things, that feels like a pretty broad brush. So help me understand this.

[00:02:36] **Vincent Bédat:** When you go to high school and a lot of people that would go to ETH maybe,had an easier time with math and physics and stuff like that. Whereas when you go to ETH those people around you are all absolutely brilliant in those fields. And so you're doing, the basic math from high school is long over, and you really have to go into the mechanics, the physics, understand core concepts to a higher level. And yeah, having those people around you, that, for whom this, can be, self-explanatory, was a big push. And like it's an environment that is, Very much about learning together. Whereas, there are a lot of other u like universities where it's about, competing, about who has the best grades and stuff like that. I always felt like ETH was different in that way. it was supporting each other.

[00:03:26] **Susan Kish:** So what was the hardest thing you studied?

[00:03:34] **Vincent Bédat:** The hardest thing I studied?

[00:03:36] **Susan Kish:** Oh, don't tell me everything was easy, right?

[00:03:39] **Vincent Bédat:** No, I'm really literally trying to think of the hardest, since a lot of things were hard. I was always more in, into mechanics and like the real kind of, how do I use this knowledge to build things. I think the physics and more the theoretical aspects of physics was always, a little bit harder for me and I think for me it, it is always a lot that comes with interests. The more I'm interested in the subject, the easier it is.

That just means you're human, Vincent. Fair enough.

[00:04:07] **Susan Kish:** So what's the first thing you built?

[00:04:13] **Vincent Bédat:** The first thing I think that I built was probably a rocket for my, high school, matura. I built a, like I think it was about two meter, a rocket that, that would fly up into the sky. And then if I remember correctly, it was around 200, 300 meters, at which point it would split and come back with the parachutes. Yeah, that was one of the, first bigger

[00:04:38] **Susan Kish:** That sounds cool. And did you actually have it take off and do the whole thing?

[00:04:43] **Vincent Bédat:** Yeah. I, unfortunately I cannot find the video again. I think I lost the video. It was such a good moment.

[00:04:49] **Susan Kish:** And what kinds of stuff did you build while you were at the ETH?

[00:04:53] **Vincent Bédat:** So during my bachelor's thesis, I started experimenting with some quick prototyping, 3D cutting, to create some very, like simple mechanism, but built with new manufacturing methods and then doing my master's thesis, I was working on the foot of the animal robot. It was a prototype at the time, at Marco Hutter's Labs.

For my internship, I worked on a robotic exoskeleton that a human could wear and, remotely control a robotic arm. Yeah, there's a lot of things that fascinate me around that field.

[00:05:29] **Susan Kish:** So you finished your Masters and then what did you decide to do?

[00:05:34] **Vincent Bédat:** And then I wanted to continue with this very hands-on approach and I thought that the best thing to do would be a startup. I think like with the idea of I want to build my own thing, that not only translate to like mechanical, but also to business and wanting to be very much part of building up a business.

So I was looking for a startup and I found one in Germany called Synapticon, which was perfect. The startup was in robotics, was a pretty small company. I feel like in a small company, a person can have a bigger impact, can have more freedom in like, exploring and I thought that was a perfect, first role after, after my master.

[00:06:16] **Susan Kish:** And so was Synapticon involved in robotics?

[00:06:20] **Vincent Bédat:** They were, yes, they were. so they are building the controller, basically the electronics that control electric motors that are present in every robots and those motors have to be controlled with a very high precision and often, like with a minimizing technology, you want that electronic to be as small as possible.

They built this and as a mechanical engineer, I was mostly in charge of how to integrate that hardware into multiple different applications and basically help customers by make doing the first step and showing hey, like this is how you could do it, and this would help so much with your application.

[00:07:00] **Susan Kish:** Okay, so that sounds like great fun, but clearly you left. So what was the catalyst and what did you decide to do next?

[00:07:09] **Vincent Bédat:** Yeah, I was really having fun as an engineer, but slowly was getting more and more into a project management role and I did really like this since again, about building up something and instead of building up a robot, I was like trying to build up more of the business around everything.

But I felt like I needed something more educational wise and therefore applied for MBAs in the US and yeah, I got accepted at MIT Sloan, which, was amazing.

[00:07:38] **Susan Kish:** A great school. Plus there's a real ecosystem of robotic startups and spinouts around greater Boston. Right?

[00:07:45] **Vincent Bédat:** Absolutely.

[00:07:46] **Susan Kish:** What was different if you had to compare and contrast classes at the ETH and classes at Sloan and MIT? What was, what were the big differences?

[00:07:57] **Vincent Bédat:** It's, yeah, I think it was much more, also because of the field, I think much more conversational, much more about debates and,I think engineering often there's one true solution. There's no multiple ways to think of this, that's the formula, that's how it works.

Apply it. Whereas, whereas maybe with an mba there are more classes where you have,you can have discussions and, there's no absolute right answer.

The MBA is, a lot of it, as people say, is about connecting and like, you know, getting to know the people. But I do feel like this is something that, that we can really bring also to ETH in a federal level. And I think ETH Circle is exactly what I was looking for. Like being able to meet people from ETH and from different years of ETH is something that I'm think is super interesting.

[00:08:50] **Susan Kish:** We are gonna put ETH circle to the side, cuz I'd love to dig into that more. But one final question about MIT and, coming to Sloan, if you had to give advice, to somebody who just finished there just as you did an undergraduate and then a master's degree, and they were looking to come study in the States, what pieces of advice would you give them to prepare them to do well at an institution like that?

[00:09:24] **Vincent Bédat:** I think a lot of, it's gonna be like experience the diversity of culture and be very open, go and meet people, come in with a very open mind in order to be able to really get as much as possible out of studying in a different country that has famously like a very high diversity.

So I think open-minded and coming in open-minded and with a willingness to get to know people. I think that's what I took a lot from.

[00:09:54] **Susan Kish:** And it also sounds like put a value to the diversity of people and experiences.

[00:10:01] **Vincent Bédat:** Correct. Yes. It's, I think those that led to so many interesting discussions to talk about how do you do things in the US, how, did you used to do it back in Europe? How do you do it across the world? And so getting those learnings and trying to like, you know, like, oh, those are the things that we are both do the same, and it really works well.

Or you do those two things differently and you get different, impacts from it that I think those are interesting, the discussions are super interesting.

[00:10:27] **Susan Kish:** So not everybody who's listening to the podcast may know what the ETH circle is, so can you explain what it is first, and then let's talk about that for a while.

[00:10:37] **Vincent Bédat:** For me, ETH Circle is really a place where, we can get back to, meeting fellow students that studied at ETH that valued their experience att and want to continue like sharing this value further. And I think that's what ETH Circle represents for me.

I also think there's a mission there to continue to spend that value and to bring those, people together that studied there to continue supporting each other, which should be a big part of an alumni organization, in my opinion, is to help each other out.

[00:11:16] **Susan Kish:** Do you have any specific ideas on things that ETH Circle can do or examples of how ETH Circle made a difference?

[00:11:25] **Vincent Bédat:** I think the example that's also made me want to join, was that the, one of the first dinners that we had, that was in Boston actually, and, I met with, I think there were about 20, 25 people from ETH, I think around half of them were local to Boston. And I was able to meet people from all sorts of different industry in one evening and have the very interesting discussions at that point and it just, it's enriching, I think in one's life to have those discussions and those people to talk to.

[00:11:59] **Susan Kish:** Let's go back to the question about robotics, right? The world is full of headlines about next generation robotics and where that field is going. I just saw a video where, Chat GPT got loaded into a robot at, I think it was at iRobots, right? So the robot could talk right, and answer questions and follow commands.

Where do you see, what are the next big challenges around robotics? Where do you see that field going?

[00:12:29] **Vincent Bédat:** Yeah, I think robotics has had like a massive amount of success in industrial and manufacturing setting. But for a while now we've talked

about robotics as like everything that it could do and I think people want to finally see some result. I think aside from like maybe your vacuum cleaner at home.

[00:12:51] **Susan Kish:** I love my little vacuum cleaner.

[00:12:53] **Vincent Bédat:** They are incredibly helpful. It's right next to me and oh my God,I definitely needed it. But I want to see more, like I, I think more people have to also focus on what are the real applications that we can actually hit in the next five years. There's been more and more of theoretically you could have this robot that, cleans the dishes for you and, all of those things. It sounds amazing, but I do think there's like those closer lower hanging fruits to catch where robotics could have a big impact for society.

[00:13:21] **Susan Kish:** Where do you see, where do you see tangible things that can make a difference in that five year timeframe?

[00:13:27] **Vincent Bédat:** I'm already looking out the window and I regularly see for example, autonomous cars. so those are in a sense like very much robotics. And I do think, robotics like that is definitely much closer to getting fruition versus, for example, like direct to customer robotics, like for somebody to use at home.

That always comes with a lot more challenges.

[00:13:50] **Susan Kish:** So you see, cuz you must live in San Francisco cuz that's the only place I know with autonomous vehicles going around.

[00:13:57] **Vincent Bédat:** Yes.

[00:13:58] **Susan Kish:** So you see applications in transportation, right? You mentioned already manufacturing. Those are those huge robots that put cars together and stuff like that, right?

[00:14:12] **Vincent Bédat:** Correct. And in warehouses.

[00:14:13] **Susan Kish:** And in warehouses, how do they use robots and warehouses?

[00:14:18] **Vincent Bédat:** A lot of people know Amazon and Amazon bought that Kiva solution and Kiva actually was an invention that also, one of a professor from ETH actually worked on indirectly. It's a professor from ETH that actually provided the robotic solution for Amazon. There's a ton of warehousing solution around robotics that is exploding right now in order to increase that labor efficiency.

[00:14:44] **Susan Kish:** So machines that can somehow scan and then pick up and put into boxes or scan and sort or that kind of stuff.

[00:14:53] **Vincent Bédat:** That can help exactly, that can help basically humans be more efficient and to increase, like how, the goods come and get out of a warehouse faster.

[00:15:04] **Susan Kish:** Got it. I've often wondered about some of the prosthetics. You talked about working in exoskeletons and there also seems to be an intersection between robots and that kind of work. Where do you see that going?

[00:15:18] **Vincent Bédat:** The advancements there have been amazing. I've seen quite a few videos of more and more popping out around, some active robotics, so that means with motors, but also just some passive mechanics that make walking so much easier when you have a prosthetic leg and like nearly invisible to see the difference, with or without.

So I think there's a lot of solution there, but again, I'm wondering if, a passive, just purely mechanical, which is also one of this beauty, if you can solve something purely mechanically, could be a solution as well. So mechanical watches are still like something that I found beautiful, like it's purely mechanics and I know that there are battery powered ones that might be, much simpler.

But if you can solve it with mechanics, you can have some big advantages as well.

[00:16:04] **Susan Kish:** Fabulous. And there is this interesting intersection with artificial intelligence and robotics. Can you talk about that?

[00:16:17] **Vincent Bédat:** Yes, I think Chat GPT has really refocused everyone on what AI can do. I feel like there was a lot, like there was starting to be a dip where everybody was talking about AI, but there was like a

[00:16:30] **Susan Kish:** Couldn't figure out what the hell it was.

[00:16:31] **Vincent Bédat:** Yeah, exactly. There was a question like, okay, apparently AI is the big new thing, but

[00:16:37] **Susan Kish:** but what is it?

Yeah. What is it doing for me? Yeah.

[00:16:41] **Vincent Bédat:** And I think Chat GPT kind of brought back the public eye to what is possible and robotics for sure is gonna be a field where more and more of this will be applied. I've seen a startup of a, actually also a ETH, colleague

[00:16:57] **Susan Kish:** How do you call it? Preventive maintenance. I think. So basically it's not even that robotics, but it's a sensor that you would basically place on a machine and with AI you could over time learn the patterns of vibration or the sound of the machines and then learn when that machine sounds too like be close to

braking and then repair it before it actually breaks. So maintenance, not on a, schedule of doing it every three months, but maintenance when it's needed or just before it's needed.

[00:17:26] **Vincent Bédat:** Correct. And I think everybody think when we say robotics, a lot of people think of the arm, like the arm robot. And I think there's a lot of application like those which are like close to robotics, that are like very accessible by AI now. And those will be the things that will start to boom. yeah. A, lot.

[00:17:46] **Susan Kish:** Very cool. So you live in San Francisco, right? How do you like Northern California? And are you gonna be staying there for a long time?

[00:17:56] **Vincent Bédat:** That's a good question. No, I really enjoy it here. It's, the, at least like the nature reminds me very much of Switzerland in the sense of it's very close. Like it's, I can get out of San Francisco in 15 minutes and be, very much in in the hills.

So that aspect is amazing. I have quite a few friends, that were studying with me at Boston, that, that came to SF. So I think the only bigger negatives here is that it's even further away from Switzerland than Boston. So the trip back is long.

[00:18:30] **Susan Kish:** And the time zone change. The time zone makes it tough.

[00:18:33] **Vincent Bédat:** Yes, exactly.

[00:18:34] **Susan Kish:** Yep. No, absolutely true.

Got it. Any plans to return to Zurich?

[00:18:39] **Vincent Bédat:** Not yet. I think. I'll stay here as long as I feel like this is the place where I can make the bigger, the biggest changes, the biggest innovations and, yeah, eventually, maybe back to Switzerland, but no plans yet.

[00:18:55] **Susan Kish:** Well, thank you and thank you Vincent so much for your time. This is a great conversation. Really appreciate it.

I'd like to close with asking a few questions that we usually ask the folks who are guests. And the first one is, if you're in Zurich or at the ETH, what's your favorite place to go?

[00:19:19] **Vincent Bédat:** I think right now I would think of just, home.

I know it's maybe a bit simple, but it's been a while, so for me, the home I grew up in represents, like seeing family again, and, I, I always was, having a lot of friends over so it just means seeing friends and family again.

That's lovely.

[00:19:40] **Susan Kish:** And when you were growing up, other than knowing that you wanted to go to the ETH, what did you wanna be when you grew up?

I always wanted to be, an inventor. That's how I like as a kid. Exactly. As a kid, I was always saying I want to be an inventor. And you are?

[00:20:00] **Vincent Bédat:** I f feel like I'm the most inventish I can. I can be at this point.

[00:20:06] **Susan Kish:** And finally, what are you curious about now? What are you learning? What are the books on your bookshelf by your bed, or what's on your Kindle or whatever, or podcasts you listen to?

[00:20:18] **Vincent Bédat:** I think, yeah, I think you mentioned it. I'm learning more about AI, I think seeing its real application, and not as, like what it could eventually do is making me realize what I can do. And then I think continuing to connect engineering with business and finding those cross section, has become more and more something I'm interested in.

Not doing engineering for engineering sake, but actually engineering that has a purpose and can help. Whether it's a business or even if it's just a nonprofit. Like that kind of thinking is a mindset that in engineering school we don't necessarily have of we are learning how to engineer, we not necessarily how to think through what can I engineer that's gonna be useful.

[00:21:01] **Susan Kish:** And make a difference.

[00:21:03] **Vincent Bédat:** Exactly.

[00:21:03] **Susan Kish:** Vincent, thank you very much again, delighted to have you here. this was a great conversation and I look forward to seeing you at an ETH Circle.

I'm Susan Kish, host of the we are ETH series telling the story of the alumni and friends of the ETH Zurich, the Swiss Federal Institute of Technology in Zurich. ETH regularly ranks amongst the top universities in the world with cutting edge research signs engineering. And people. The people who were there, the people who are there, and the people who will be there. Please subscribe to this podcast and join us wherever you listen and give us a good rating on Spotify or Apple, if you enjoyed today's conversation. I'd like to close by thanking our producers at ETH Circle and Ellie Media, and especially to thank you, our listeners for joining us.