The ShermCast: Life as Freelance Engineer (S5E2)

In this week's episode, hosts Joe Blanchet and Sam Yip talked to Sherm Alumni Jason Toby about what it means to be a Freelance Mechanical Engineer and how he used his experience at Northeastern and co-op to figure out what he wanted to do. We take a blast into the past as Jason tells us about his time being involved in the Sherman Center and what it was like.

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https://www.northeastern.edu/sherman/
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Image description: The ShermCast written in bold black and red letters with matching colors on a grey color block background. A large old fashion microphone image with protruding lightning bolts representing sound. Text that reads "The Entrepreneurship Podcast with Sam Yip and Joe Blanchet".

Joe: Welcome back to the ShermCast, we're super excited to be back for a brand new season, full of new faces or voices and new topics.

Sam: It feels like this season is going by so quickly but we had another amazing episode and caught up with Sherm Alumni Jason Toby. We talked all about how he became a freelance mechanical engineer and why he loves being a freelance mechanical engineer. We talked about his passion for engineering, building and designing and his involvement with the Sherman Center.

Joe: By the way, guys just want to let you know that we are recording in WRBB studio here on campus. WRBB is Northeastern's local radio station, so make sure to check them out at 104.9 FM. We'd also like to give a really big thanks to the WRBB team and podcast director Susanna for letting us use their space and equipment. If you're new to the ShermCast, we are a podcast dedicated to uncovering the meaning of Entrepreneurship in the Northeastern community and the Greater Boston area. We focus on topics, like sustainability, product development, and overall, what it means to be an entrepreneur. If you've listened to the ShermCast before, we are so excited to be returning for a new season, and we're looking forward to some of the really cool things we have coming this season.

Sam: It's really exciting to be back for a second episode. I feel like season 5 is going by really quickly. Joe, what are you thinking?

Joe: Yeah, so it's October already which is crazy in terms of, you know, the beginning to my fourth year and also being part of the ShermCast. But I'm really stoked for today's episode because we get to learn more about the Sherman Center, specifically the Sherman Center's history and how it's grown over the past few years. I'm also really excited to learn about what it means to be a freelance engineer, you know, as engineers ourselves and talking about engineering entrepreneurship, I think that's something that we can learn a little bit about. So without further ado, I would like to welcome Jason Toby. Welcome to the ShermCast Jason!

Jason: Hey, how's it going? Thank you guys so much for having me.

Sam: Yeah of course, so for our listeners Jason, why don't you introduce yourself a little bit, you know, who are you?

Jason: Absolutely. So, my name is Jason, I graduated from the mechanical engineering school at Northeastern in 2017. And I live in Chicago now and I'm a full-time freelance mechanic engineer.

Sam: Awesome. Yeah, so, we actually, we we're looking for people to come onto the ShermCast, you know, like a few weeks ago and Jason luckily hit us up and was like, "oh, I would love to be on the ShermCast!" and we talked to Ted about it and Ted spoke, so, such good things about Jason. He spoke so highly of him and we'll talk about that later on, but we're really excited to have you on to the ShermCast today.

Joe: We all know that an endorsement from Ted goes a very long way. If you guys don't know, Ted is the director of the Sherman Center and if you want to hear a little about who he is, what he does, make sure to check out episode 1 of the ShermCast wherever you guys will send a podcast. But yes, Jason, we're super happy to have you on the show. We like to start out here with a question we ask all of our guests. What does entrepreneurship mean to you?

Jason: Yeah, that's a great question. I've given it a lot of thought over the past year for at least what it means to me specifically. I think it's about trying to push yourself in a direction where you are able to sort of do what you love and make money from it, and that's kind of it for me. And I think that is sort of a freelancer's bent on a little bit because it's not so much about launching a product or necessarily, even necessary business. It's more of a personal journey, I think and, yeah, I think as a freelancer I would say there is sort of this great weight, but why blog article on finding intersection between what you can make money from, and what you love. And I think that's sort of what it is. So if I had to distill it down for me, personally, it has been that and it's sort of a journey to figuring what that, what that is for me, personally.

Joe: Yeah, I think that we're often times just kind of like bottlenecked into the traditional path or whatever, that may mean, but I think it's really cool to see someone doing things their own way and being a bit of a Trailblazer so, really excited to hear about what, what kind of techniques and strategies you're implementing to be a successful freelancer. But what exactly does being a freelance mechanical engineer mean?

Jason: Yeah, definitely a good question, so breaking it down a little bit, like the freelancing side simply means that I'm not conventionally employed by any employer, I'm not a nine-to-five employee, I primarily work from home, I could technically work from anywhere. Although every freelancer has their own situation, so a freelance photographer might actually be traveling to clients and taking pictures, as a mechanical engineer I do actually have a few local clients here in Chicago. So it really does depend on, the nature works very flexible. Primarily freelancers usually, the term is like people haven't incorporated as an LLC yet and there's some people who do that, who have used the term freelancer and work for a multitude of clients, not just one or two clients they're not contractors, freelance is sort of a subset of that. And then the Mechanical Engineer side, I sort of get to try to leverage skills I learned at Northeastern through my mechanical engineering degree and then also outside of my mechanical engineering degree, things that are sort of tangential in sort of the design world. I sort of describe myself as a mechanical designer and I'm trying to sort of move into the product design direction overall. So yeah, it's, I'm always trying to figure out what it means to be a mechanical engineer. Someone, I was telling a friend and the friend said that their mom had said, "what is a mechanical, a freelance mechanical engineer do?", and I'm like "oh man," so, there is sort of a way I've positioned myself over the past year freelancing to figure out exactly who my target customer is and how I can provide value to people.

Sam: Jason, can you talk about some of the advantages and disadvantages of working in freelance?

Jason: Yeah, and that's a really good one. I think freelancing is sort of put on a pedestal a little bit. I certainly had fantasies about what it would look like when I went freelance. I would say the biggest positive and challenge at the same time if I had to bring it to one thing is just you are your own boss. So I have learned that being your own boss is not all, it's cracked up to be. It's not all, you know, going to, I feel like a lot of, there's sort of the digital nomad kind of thing too that is sort of fantasized a little bit, but being a freelancer in its core, it's the positives are, you know, you got to set your own schedule, you get to, get a lot of autonomy and how you do the work. Your sort of goal is to deliver things to clients and then the challenge is just sort of like just getting your whole life in a framework to do that. It's not

just about your work, it really, at least for me has been sort of an overall life journey about, how do you adjust your mindset about where you want to go and how can you learn skills through freelancing that might help you if you do want to go back into working in a job someday. So there is sort of that struggle too, I mean, a lot of people pop in and out of it over the years too. So just learning about freelancing has been a huge thing for me, I didn't really know much about it before I started.

Sam: I mean, it's just like you said, there's like an advantage to your disadvantage when you get to make your own schedule. It's like okay, like "oh, maybe I'm not feeling so great today, like I'll just take the day off" or something and then like that can become like just like a butterfly effect, especially during, you know, the pandemic. But another positive of that is like you get to make your own schedule. So like you get to tell yourself I'm working during this time, and I'm not working during this time. So it's definitely, I could see the positives and negatives of that. You talked about like, again, making your own schedule and stuff like that, but are there any like parts about working as a freelancer that you would say, is, like your favorite thing?

Jason: Oh, that's a great question. There's, there's a few things. One of them is that I really like the type of people I get to work with. I, working as a mechanical engineer, I rarely interface with customers directly. And now I have a very close relationship with my clients, I work with mostly individuals and most of them are either representing small startups or they're just individual inventors that want a prototype made so because that's my group. I deal with some of the wildest and wackiest ideas. I've worked on cake boxes that you shoot confetti, I've worked on footballs, foam footballs that have to have specific containers inside that are proprietary that I wish I could talk about cause they're really fun. I am working on a beehive box right now that has to be closed in certain ways. So just like the projects I work on is probably one of my favorite parts, but it, as cool as that sounds there's like a lot of challenges to actually being an entrepreneur that meets people's individual needs. They don't know how to work with a freelancer, and that's what sort of one challenge of being a freelancer is like in a conventional company you have the HR department whose job is to help the different aspects of the company come together, as a freelancer you're kind of your own HR team too. So, you have to think about the way you word things, the clients you can't, if you're angry with them, you have to sort of manage that. So I'm actually part of a freelance community, that's and that's one of the most helpful things for me, has been joining a community for freelancing and similar to how the Sherman Center acts as sort of a hub for students who are going through their own phases of entrepreneurship, there's sort of similar things like that for freelancers out there that I think community is something that you guys probably understand as part of the Sherman Center, is so important when you're trying to pursue your own thing like that. So, yeah, I think one of the biggest downsides to tuck, to kind of circle back to your question, is the isolation, especially during quarantine, you know, you're working by yourself. If you're just an individual freelancer, there are agencies, freelance agencies as well. And that's one of the benefits of those is that you don't have that, but yeah, I mean, you're just by yourself. So, you have to sort of navigate a lot and you, and your friends may be working 9 to 5, and you might be, you know, working on something at a coffee shop at 2 p.m and you're like "who do I do you know call? I don't have anyone else to go to potentially", so there's definitely down there, yeah.

Sam: You were talking a lot about community, which like you how you mention we are so focused on that in the Sherman Center and I love that there's a freelance community, you know. It seems like people think that like freelancing is all on your own and well, it is all about individuality, it's nice to have somebody else that you can like talk to, you know like, "Okay, how do I do this?" Or like, "how should I go about this? When I'm, you know, either talking to a client," We also talked about, you know, how you work a lot alone and how sometimes that can get lonely, but do you find that it takes like longer or like requires more work or effort to work alone as a freelancer rather than, you know, having coworkers or teammates in a usual company.

Jason: I'd say it has ups and downs, I mean, I'm somewhat of an introvert like an extroverted introvert. Like, I particularly get a lot of, I can, I enjoy working on my own, but then I sort of need to have, so that's one of reasons I go to a coffee shop, like I like to be around people, so for me that's a really good atmosphere. I also have tried working at a co-working space, there's one in Chicago called M-Hub, it's actually focused on physical fabrication, great space, great community. It's just expensive, it's like $300 a month. So, for me, as a freelancer, I'm thinking always about.

That's another thing, like, the, getting started in freelancing is hard financially. So you kind of have to be ready to go down that road, and there is definitely an individualism to it as well. Yeah I've missed having co-workers, a lot, I really have. And I've, I have thought about, at times going back into a conventional job for that reason alone, just for the social part of it. And sort of working together with people. But there is sort of a social aspect with clients as well. And sometimes you are, I'm the mechanical engineer and there's an electrical engineer, and you'll have like this little team, but then, you know, the band breaks up eventually and things move on. So they're sort of that project-by-project basis part of it too.

Joe: Jason, I love that we're moving really fast, and we're getting a lot, a lot of really insightful information, out of you. And, we will continue into more about navigating the financial structure of being a freelancer, but I do want to circle back a little bit and ask, why did you decide to be a freelance engineer and not go the traditional route?

Jason: Yeah, and that's a really good question. And for me I think that I always kind of struggled with the idea of being in a nine-to-five job. Like I never really knew where I wanted to end up when I went into engineering, I knew I wanted to study it but as I got into it, I found that and, of course, co-op shaped that at well, I did my first co-op at Hasbro. I'd actually turned down an offer for GE Aviation and I think that was sort of the first start of my sort of struggle where I realized that, I loved the fun sort of startupy nature of Hasbro, in the sense that you're working with all these different types of toys, but it was also a corporation and it was a corporate atmosphere and, I don't know I felt really a strong challenge for the first time in my life of balancing when I started working and it was the co-op that really started this and then between work and sort of my own creative ambitions in my own, also interpersonally I found like just I struggle being so far away from the customer sometimes. So actually the first thing I was doing immediately before freelancing, was I was working in a customer support role. I actually found a really neat company to work for here in Chicago, I had tried out, I had sort of fallen out of love with engineering at that point. I had tried a few jobs out of college and I just didn't really find them fulfilling and I had found myself working customer support for this tech startup and really enjoying it until the pandemic hit. And that, I think the pandemic hitting was for me the catalyst to getting into freelance which is really interesting. So that's why I've been doing it for about a year is I started last September. So yeah, that's, and then as to why I did that, I mean there's so many things, I think I touched upon a few but sort of being like frustrated with the process of being a corporate employee of a company, especially in customer service. I felt myself very limited in what I could say, how I can help people. But I also felt like I was on the engineering side, I was so far removed from people that I had a hard time feeling connected to the product. And I think after working in startups, for a few years especially, I feel like I could just try this on my own. So by a bit of luck, financially had a couple savings to fall on, so a couple things had just lined up and I sort of also think there was a bit of an unchecked box on my list of like: what would happen if I tried this? So I got an upwork that was where I got started and it, just the fact that there were actually people looking for this kind of a thing out there was really, like I gave myself three months and I said, let's see where it goes. I was actually, I was planning to work in a part-time job at this company called 3D Hubs here in Chicago too but things didn't work out. So I ended up just doing full-time freelance, and fell in love with it really.

Joe: You know I can really relate to a lot of what you said, personally. I've co-oped at two large companies and, medical device companies and you know, you're developing this life-saving device, but you never get to see down the line when it hits a patient hands and they can actually use it. And so that can be really hard and for my third cop, I know personally, I'm looking to work at a startup or a smaller company, but it's like you're working at a startup every project you get, you know, so I think that's really interesting and it's a path not many people know about or consider, so I was also wondering like how does it work? Being a freelancer? How do you get to work with companies? How do you structure developing products for them? How is that process different than working like being employed by a company?

Jason: Yeah, I mean you kind of summarized it, as a freelancer you're working sort of for the company, it might just be on a particular project. So for getting into freelancing, I used upwork.com. I'm not trying to promote them or anything but they are, they're a freelancing platform, they're sort of part of a larger category of things and that sort of helps by, traditional freelancing you are responsible for finding your leads and then chasing those leads and then closing

contracts. It's a lot to start with, for me upwork has been a helpful transition along. Eventually. I want to just find my own leads outside of upwork, I do have a few contracts that I have been able to get started through that. So, a lot of it has to do with sourcing leads and then, once you, it is sort of a sales process, like you're just basically saying, "Hey, I can offer this value" and you're looking for someone who has a problem to solve. Sometimes it's a company and sometimes it's just individual and sometimes it's sort of a quasi company entity where it's like, an emergent startup that's so early that they don't have anything figured out yet on that end. And so, it can be really exciting. You can be one of the first people that someone who has just come up with an idea talks to, you could also be way later down the line. But yeah, for me it's primarily through upwork and then I offer free consultation calls. So then the first thing that happens, is there's sort of a, here's my cover letter I sent to them on upwork, they have a job posting and then we arrange a consultation time. And I've had a year to really experiment with, like I have screwed up so many times. I have made so many mistakes. I have submitted so many bad applications in but I've also, you know, found moments of success in that. So that's been a really interesting process, there's sort of like a playground aspect of it to me, that's been very helpful cause I had to iron out so many different aspects of my own work flows for a long time, and I'm still working on those things.

Joe: What do you think is that thing that you can offer companies looking to develop a product that would benefit them as opposed to hiring an employee or just going to any of their current employees?

Jason: Yeah. I mean there really is something about, that's a really good question. I think as an individual, I mean one of my strengths personally is communication. I think as an engineer, there's sort of this conception that we don't know how to communicate very well. I just think it's something you gotta work on like everything else. And some people take time to put into that and some people don't cause they're doing other things and that's valid. For me, I pride myself on being able to communicate well and I think working with clients and especially working in customer service. And as a side note, I've also used to do some work in, like, I know a lot of people that do this on the side. I worked in like the coffee industry for a bit, as a cook. I've worked in like various, I worked for Pavement Coffee for a while actually as a, in their, in their back, in our kitchen. That was like my first thing I did in college, I was living in Allston at the time and I found that that helped a lot. We kind of, so I guess I'm trying to be a little different than an engineer you would hire, cause there's sort of a thing I've heard that when you're working at a company they're telling you how you're doing. Like they tell you what they want from and also how to do it. As a freelancer you're just sort of delivering the thing, how you do it is sort of up to you. So you sort of get to develop like this expertise. For me, like I've honed in on the CAD program I use, it's On-Shape. So I really only work with clients who work around On-Shape as a CAD program. So there's a lot of things like that that also like, a company might be looking for a very specific thing. I think there's a whole debate within freelancing about specialization versus not and I would say I'm somewhere in the middle there. I'm pretty specialized but I work on a lot of different types of projects. So I think one of the benefits that I might have for companies, is just that sort of versatility that someone in the field, might be much more specialized or have a hard time communicating if they're more of a generalist. I hope that answers a little bit. I'm still figuring it out myself. That's a great question. I hope I have a better answer someday.

Sam: I feel like those were all good answers.

Jason: Oh great.

Sam: Cause you were saying, everything, basically you were saying that everything is a learning experience. Especially over the past year that you've been working as a freelancer. You've just been trial-and-error, you know. Seeing if something works and if it does great and if it doesn't, you know, you know now know not to do that. And that's kind of what I find so interesting about freelancing, cause you make it your own and you know, you were saying about kind of why you started and why you got introduced and everything. And you were just explaining exactly reiterating what you said as your entrepreneurship definition, you know, like how you wanted to just do something and like you're able to make it happen while also making money off of that.

Joe: Yeah, and it's also clear that you've taken all of these skills that you've kind of developed doing other things and you've put them towards building a career for yourself, you know, so that's exactly what you were talking about at the beginning with entrepreneurship.

Jason: Yeah, and there's always sort of a, at the back of my head kind of voice thing saying "You can, you know, you don't have to follow this path" like and I think that listening to that kind of inner voice is important. I think you have to temper with practical, practicality, that was the thing after a year. Like I was so much of an evangelist for freelancing. When I just started, I was like, "everyone should be a freelancer" and part of what it was I wanted people to hang out with me in the middle of the day. to work on things. And now I kind of want to say the opposite. I think it really is a particular certain thing. If you can try it out, great and diving into it full-time is probably not the best thing for everyone, but it's been a very fun adventure for me, and I hope to continue. Yeah. I hope it's a career. For me it's also opened up a lot of questions about what I might want to go to graduate school for, which has been really fun. Cause you sort of get to build your portfolio a little differently as a freelancer too.

Sam: Yeah, that's awesome. We also touched on you know, throughout this conversation a little bit about COVID, but I just wanted to know more. How was like your job specifically affected by COVID? And maybe what did you do, like during the pandemic as a freelancer?

Jason: Yeah, I mean, so for most of the early pandemic, I was still working nine-to-five in the customer support job. And previously, we'd been working in the office, I'd take the train everyday downtown and the biggest thing for me was I was living in a 500 square-foot studio apartment. So like my bed and my kitchen were in the same room and I think that was the biggest challenge was when I did switch to freelancing. But I remember being, feeling really stuck, cause there was a hiring freeze in my company, they didn't really know what they were really doing, my workload started to go up, and because we worked directly with customers, I was feeling the pressure. I was, at lot of the, we actually paid our customers to contribute in research studies for ux research. And that was sort of the way my work and company were positioned at the time and people were starting to message me like I need money for rent and like hospital and like my, you know, people people were dying. It was, I started to feel like, not I wasn't, I would never say I was on the front lines, but I was sorta on like somewhere, you know, up the ranks. I was feeling the pressure of the situation and I felt like, I need to focus on how my career is benefiting from all the effort I'm putting in and I just, it hit a breaking point for me. And my manager was very understanding. We were all going through a lot at the time and a lot of people were making changes. So it almost wasn't that weird. It was actually like a pretty weirdly normal time to transition to, and at the time, I was gonna do part-time freelancing and part-time something else, and that something else just didn't work out. So, it's sort of everything lined up, and it just gave me the right fire. I also had the financial means to support myself for a few months while I figured it out and I had my family support too, believe or not. So yeah, and they've sort of been watching me over the past couple years in saying well, "he's good at these things but he's not finding the right places." So my parents have been very supportive about it and that's been really helpful. The mental health side of it is very important too, like definitely a thing and being able to validate the path that you're on because there are going to be days when you're freelancing or anything, really where it just doesn't go the way you wanted to and you like, "what the heck am I doing?" And you have to kind of reassess and so yeah, it's been, there's a lot of different aspects of how the pandemic specifically has affected that but I think that in one part when I hear a lot of freelancers like I listen to podcasts that came before the pandemic and they'll talk about finding their first clients and they talk about going to meetups and stuff and I'm like, oh I can't do that. Although that's coming back, knocking on wood. But yeah, I actually just at a Northeastern networking event in Chicago last night. It was kind of funny meeting some of the co-ops that just moved out to the area and stuff on a tangent. But networking is an important part of it. I do think the pandemic has affected that, a lot.

Joe: That's pretty cool that you're still in touch with the Northeastern Community, I love to hear that. I also really like that you mentioned focusing on your mental health, because as engineers, as college students, as recent grads, you know, everybody is pushing us to just go forward, forward, forward, keep on moving. And you know, it's worth it to just take a sec reevaluate yourself and make sure that everything is all good. So it's awesome to hear it from somebody who is you know, out working and has graduated coming back and giving that advice.

Sam: I love to hear like stories about, you know, people working in the pandemic because, you know, a lot of the stories are, like, you know, meh like they're kind of sad but like, your story is like really happy cause it's like, you realize, like, okay, this is this customer support job that I'm doing, not really fulfilling my life. You know, it's just dragging along and I'm just waking up every morning, just like doing something I don't really want to be doing and then, suddenly the pandemic happens and you know, it was terrible and it is still terrible. But, you know, something good came out of it, luckily and that you're doing something that you really enjoy, which is awesome.

Jason: Yeah, I'm really grateful for it. I mean, for me, it's going to take awhile to get back up to the level of financial stability that I was feeling before the pandemic, just cause to put it bluntly, working full-time, the main benefit is usually to make a stable income, freelancing is it can be really lucrative, but it takes a few years to get to get up there. So I think it's affecting kind of the lifestyle, I mean, I ended up moving farther away from the city's center but into a more spacious apartment. So I can spend more time at home and not feel like I'm in a studio all day, that's been really nice. And yeah, I think I think the one thing I'm also amazed by is I really I don't think, I don't think it really matters if you're a freelancer or working full-time or whatever or a student, whatever your situation is. If you feel like it's the right thing for you at the time, if you really truly feel that sense of purpose, that's really powerful and I think entrepreneurship has a lot to do with that, too.

Sam: You mentioned at the very beginning when you're introducing yourself that you are currently in Chicago and you're Chicago-based. Is that where you're from, like before you went to Northeastern?

Jason: Yeah, my parents live in the suburbs here in Naperville. I lived with him for a bit when I first moved here. Now I live in Logan Square here in Chicago, a really neat neighborhood. And yeah, I mean, I always kind of, I tried actually, living in Boston. I was living in Charlestown working at the Schrafft center cause that's where Beevy, the startup I was working at was headquartered, that was after the pavement, coffeehouse gig, and then, I just kinda hit a point where that move was probably, to Chicago, was actually much harder in some ways than even starting freelance. Cause that was the first time I'd ever quit a job like a big 9-to-5 job. Like I'd, internships end but as a full-time engineer you kind of, I mean any full-time employee, you have to sort of ask yourself over time, you've been in the company for a year, 2 years. Is this meeting my goals, is this getting me where I want to go? My, actually I had some pretty dramatic things happen to the company, where I was actually told, "Hey, we're not actually going to do the thing that you're hired to do or want you to go in a different direction with the role." So I sorta had more of a concrete choice. I don't think that's very common, I think it's more common in startups, but they wanted me to do more reliability engineering. I wanted to be a product designer. And so I kind of, a few things had happened in my personal life. It was just the right time for me. I felt, I visited Chicago and I just felt the pull and I'd never exploredChicago as a city, I'd always grown up in the suburbs. So, very long answer to your question. But yeah, I'm based out here in Chicago. I really like it out here.

Sam: I like how all your answers are circling back to what you previously said about, you know, being able to be a freelancer and like working wherever you want, you know, so because you wanted to live in Chicago, you're able to do that. I'm curious like does Chicago have more opportunities than like places like Boston or like, even New York and stuff like that.

Jason: Not for mechanical engineers, I think I actually got kind of spoiled by Boston's scene a little bit because of all the universities and all the like, really, really high tech companies out there. There's a lot of manufacturing in Chicago. There's not a lot of hardware product development that happens here. I think, if you're looking to move and you're a mechanical engineer, you're like, that's why I think sometimes finding a job first makes a lot of sense, because, you know, but I think, like, Chicago, I learned, what happened when I first moved out here, I actually wasn't looking to freelance, I was, this is pre-pandemic and everything. So I was, I remember doing a couple different short stints at various companies that we're just not a good fit. I have like a famous story with my friends I tell, where I was working at a manufacturing company and like I was working on soda machine valves cause I had just finished working at this beverage start-up so they thought that would be a good fit. And I remember working on day one like this drop of Fanta or like some soda constraint fall on my hand and no one was wearing gloves cause that was a procedure there and I'd, my hand was purple the whole day and I'm like, is this really what I want to do? It was like a physical representation of

that underlying question for me and then I was listening to U2 albums on the way to work and I could have sworn Bona was telling me to quit the job. I think it was one of those things where like every song you put on the radio seems like it's telling you something. I was really, I was feeling very strongly internally that it wasn't the right fit. So I think, I think freelancing to me is has just been the short-term answer. The longer-term question of where I'm going to go in my career is still very much an open one for me.

Sam: We mentioned earlier that we got in contact with you because of Ted and because of our Sherman Community, and Ted has mentioned to us your love of engineering and everything about you. How you were super enthusiastic about sharing and educating other people, about product development. And he said that you actually had a workshop every Monday night in the Sherman Center where you essentially had a work, you essentially had materials and things and tools and everything. And you taught people how to build stuff and then that later is known now as Maker's Club, you know, what compelled you to use your knowledge and your skills, to teach other people and lie, why did you want to do that?

Jason: Man, that was like, so first of all like the Sherman Center and Ted have been so instrumental for me. Like I don't, having the opportunity to lead that workshop, what completely changed the trajectory of my college experience. I think around the third year of engineering school I was really feeling like the curriculum had started to drift away from project work. I actually started going to The Artisan's asylum in Somerville. Someone I was dating at the time was doing jewelry manufacturing there and then I started attending classes and workshops there and I was like, wow, this is, I'm not getting this in engineering school at all and it was like sort of the metal fabrication side. And I sort of wanted to bring some of that. I think now there's a lot more of it at Northeastern, but it's still, I mean, I've heard it's still kind of hard to get your hands on a milling machine at Northeastern, which is a useful skill when you're looking to design C&C parts and stuff. So I was trying to figure some of that out and I wanted to kind of, sort of, I felt a little frustrated about it and so I, actually my friend started something called NU.IO which was probably before the workshop in the Sherman Center. We just like rented rooms in the basement of the library and it was a very scrappy workshop. I actually got pulled over by a cop once cause I was biking with, I was on my bike with cardboard. We were going to cut cardboard prototypes and I was just holding the cardboard and the guy was like "Aw, you can't bike with that." I'm like, "Oh no, I'm teaching a Northeastern workshop." He's like "Oh, I graduated from Northeastern. Oh yeah, go ahead." Like I don't know why that let me off the hook.

Joe: That's awesome.

Jason: I was like in the intersection of, I think it was like, by Harvard Ave and Huntington Ave or something like cause I was living in Allston, I had moved out to Allston, so I think for me I just kind of wanted to create a space for people that they could learn some of the things, I found a really hard to learn as an engineer. And I think one of the big ones was just: what does it feel like to make things. So our first workshop day we actually took apart a Nerf guns. The entire workshop was just taking apart nerf guns and like, I think that meant a lot of different things to a lot of different people, but it brought, we had like 40 people, and eventually it became like 10 people and then the makers club kind of grew out of this cause Ted had given. So, I actually knew Ted, before he was at the Sherman Center, I worked, I listened to the first episode by the way, great episode.

Joe: Awesome, thank you!

Jason: I loved listening toTed's, oh 100%, you guys did great and like I loved hearing about how Ted went from hospitality and then sort of switched to academia through a career coach and stuff, that was really cool to hear about it. And he, when he was at the Dean's office, I should have realized it, even before the workshop, I knew Ted and I was actually helping him like take prospective students around and show them stuff, I think. I think, or I was helping with, I was volunteering for events relating to that and then Ted got the job at the Sherman Center, I had been in touch with him, he was really great, kind of like, confidant to me. I would kind of just go to talk to him about stuff, as you guys know he loves doing that and so and I think,

Joe: I did that earlier today.

Sam: He's the best.

Jason: There we go! That's so great. And I think that, what's amazing about Ted is that it seems like it benefits him a lot as well to give that advice. So I think actually Ted sort of saw a fit and he was like, because he knew that we were doing this workshop outside the Sherman Center and he's like, "hey, what if we brought that in?" I was so, like, it meant the world to me. I actually developed a curriculum and I sent it to him and we got really serious about it. We brought on two TA's, which were actually some of the younger students were in the first workshop came on to kind of TA the workshop and they actually brought in a film crew one day to film us. Like it was, it was pretty wild, it is one of the first and this was actually the first semester of Generate too, I think. So it was all this stuff was starting up and I was doing some stuff with Generate too and it felt really cool to be a part of that, like the Sherman Center early on, I would say is pretty much the same as it is now, it's just, there's a lot more polish and process and workflow and different. There's so much organization that wasn't there at the beginning, but it's, the vision of it is pretty much the same, I feel like it's helping people kind of get, I feel like it's a lot of it is Northeastern's own experiential learning, but your co-ops don't always teach engineers the same things, some people have great meaningful, really in depth co-ops and some people don't. So I think giving people more opportunities to share skills and also kind of like, what we would do is we'd also just teach people SolidWorks just from like scratch and say, "hey, here's all the model stuff, like you might not have learned that in your co-op, you might have learned things a little differently" and we'd then have students would would walk from computer to computer just like correcting people's SolidWorks issues and then talking about projects and stuff and it, that's what became the makers club, which has become much more of an art thing too than just engineering too. Yeah, sorry to talk on and on, I really, I've got a lot of fond memories when it comes to this stuff.

Sam: No, that was perfect. I think Ted would love to hear that too. When he listens to this episode he's going to love to hear that the Sherman Center hasn't really changed that much because it's maintained its goal the entire time that it's, it's been here.

Joe: Jason, I also got to say, you mentioned taking apart Nerf guns in, in your, your beginnings, with the makers club and growing up my brother and I used to take apart Nerf guns and like modify them so they shot harder than they should.

Jason: Oh, like the springs?

Sam: Part of being an engineer.

Joe: Definitely, I definitely understand that. Yeah, I was like, like seven or eight at the time and he was like 14 and he was like, "we're going to make this gun shoot, shoot harder than it should. So that's what we did.

Jason: That's amazing. And now there's whole businesses on YouTube built up around that, actually some of the best 3D print farms I've seen have been for Nerf guns like, and like, they'll be also for cosplay, making like a cool cosplay guns, that replicate things like characters in OverWatch and stuff.

Joe: Yeah, if only my brother and I got into that when we were younger, we could have been leading that industry right now.

Jason: Actually though. No, it sounds like, so that's so cool. We had a few folks that had that experience at the workshop too. I remember like "oh if you just make the spring tighter or you add a little shim here it actually will increase the firing power." It was cool. I think also for me it was like, I actually just finished working for Hasbro. So I, what's funny at the Hasbro, but I don't actually think I had seen much of the Nerf guns. But we had, there were so many available that we just like had a bunch lying around. So I think that was also like kind of a benefit, we just had a

bunch, we were able to get them relatively cheap. So yeah, there was a budget for the class, we were ordering materials through, I think Generate actually with supplying materials for us at the time.

Joe: That community aspect of things is just so useful, you know, and that still exists today in what we're doing. So we've come a long way and things are a lot bigger now, but it's interesting to hear the beginnings of the Sherman Center, Generate and Makers Club.

Jason: I also haven't been there recently. I hope to visit again, sometime soon. So I don't know what it's like post-pandemic so I can't say that for sure, but just, I keep an eye on the newsletters and obviously I listened to the first episode of the podcast, and I feel like, just from what I read and what I see on the slack, it seems to be pretty similar this year.

Sam: I think that even for us it's weird cause, you know, this is my second semester with the Sherman Center. So I was initially working in, during the pandemic so, I wasn't actually in the physical Sherman Center, and while our Sherman community is great, you know, it's still not that same feeling and then now although we're still in the pandemic, it's much different. So, we are both still in the Sherman Center, we get to work there a couple times a week and just being around people and working with people, you know, being in that atmosphere and community is like amazing.

Joe: Yeah and we have weekly team meetings for the operation team, every Friday afternoon. And today, every week since I've joined the team, I've walked into that meeting and there's more people in the room and the team just keeps getting bigger and bigger. I think we're at where it's going to stay for now, but just having all of these people, doing all of these things that are all like interconnected is absolutely incredible and everybody's really, really good and talented at what they do.

Jason: Yeah I also remember it was close to the entrepreneurs club, and not sure if it's still true, but there was sort of a trickle effective. People would come from those meetings to the Sherman Center and that physical space was so huge. I mean, one of the problems with the maker's club early on was we had a hard time, finding physical spaces at Northeastern that were as open as the Sherman Center, so it's really cool, so the makers club actually moved out of the Sherman Center and I believe now it's back in the Sherman Center. That's amazing to see, it's amazing full circle, really cool to see. And I think the way that Bailey and Mina, the two founders of Generate really kind of helped steer everything, to getting the resources was amazing to watch as well. So it's been cool. I think it created a foundation that hopefully carries through post-pandemic, but it's also on, up to you guys and then the new members of the community and the new members of both, the Sherman Center under Ted and all the other things that's going on with like Mosaic and just to kind of paved the way for the future, you guys get to decide for yourselves a little bit, right? So I think it's kinda exciting.

Joe: Yes, I think so and like when I walked in as a newbie this semester and the vets of the Sherman Center welcomed me with open arms. I'd walk in and they'd be like, "hey, what's your name? What do you do here?" And I've already met a lot of people. So yeah, I hope they continue that, with my journey with the Sherman Center, shifting back a little bit right now. I do also just want to ask, you know, you talked about helping other people learn engineering skills. Where did your passion for engineering come from?

Jason: Oh, man, so I'm not one of those folks that like repairing cars and stuff. I was a video game kid growing up. I loved nothing more than like doing software, I mean, I like got started, like my dad was a computer programmer and he taught me how to like modify websites. When I was a kid, this is really like a famous story in my family, I had downloaded a local copy of my, I went to Hebrew school, I grew up going to Hebrew School and I hated it. It was not, all of my friends we just absolutely hatred it, they can attest to this, it was after school you go to Hebrew school and we downloaded a local copy of the website and changed the HTML to say school was cancelled and it wasn't actually cancelled nor was was the live website actually updated, but I showed it to my mom and it worked and she's like, "oh, I guess it's canceled" like kids should've even think about that. But the second time we did it, she called, but I don't know. I feel like I've always been fiddling with the software side of things, but then it wasn't until I took like a shop

class in high school that I really connected to mechanical engineering specifically. Yeah, I thought I was always supposed to become a videogame developer. I still love things like sprite animation was a passion of mine for a while. I still play video games as an adult which is great. And so I don't know, I think a little bit was sort of the creativity and imagination from gaming and then applying it to like building Trebuchets and stuff in shop class was what really, and then I think the teachers I had for that class were actually really passionate about engineering education and that sort of instilled that in me a little bit. But when I was a kid and my mom would say that I used to show her how to throw frisbees. So, I've always been like, I would be very meticulous about, like the throw and like the grip. And I'm not even huge into frisbee or anything but I think it's just, I really cared a lot about sharing things like that. I think I've always found, I'm still exploring that. Yeah, the engineering side and the education side are both really important to me, but I think, I think as an engineer, the most important thing for me is like you you're able to sort of influence the world in a very tangible way, whether it's, whether it's producing a software product or hardware product, but I've always been sort of drawn to the difficulty in the challenge of creating hardware product. I think there's something about that, that really excites me. I do a lot of 3D printing now, I've even started designing some of my own parts and then throwing up designs on the internet and stuff and trying to kind of push myself in that direction as well. So I'm still figuring out exactly, trying to sort of tease out what that original inspiration was and figure it out. So I think about that a lot and I don't really have the best answer other than curiosity and imagination and sort of challenge too.

Joe: No, I think that's a great answer. I think that's most of the battle to be honest and I think a lot of what you were talking about is just is this innate desire to want to figure out how things work. That's something that I can relate to. I kind of always say, people ask me, why did you get into engineering? And I say, my dad raised me to be an engineer. We would, we do a lot like home improvement projects around the house and have basically, ever since my mom would let me hold the drill and he would start every project with what do you think? Like, "how do you think we", he would have a whole plan setup, but he'd be like, "what do you think?" And at first I was like, "I don't know. Like, why are you asking me? Can we just do this and get it done?" but he would pull it out of me. And then, as I got a little older and I was taking some engineering classes in high school, middle school and high school and then I would jump up and say "I got it! This is how we should do it." And then it got to the point where he was like, "I didn't think of that. That was a good idea."

Jason: Ooo, the pupil becomes the master.

Joe: Right, exactly. And so, we've developed now and now we're kind of at the point where I'm like, "all right, Dad, here's the plan." So yeah, I can definitely relate and I'm sure many other people all along this path can relate as well. You mentioned something at the very beginning when you were discussing your role as a freelance mechanical engineer and you threw in something about developing an LLC. Can you discuss a little bit about what that is and why that might be important as a freelancer and like what that can do for you?

Jason: Yeah. That's something I actually learned about at M-Hub, one of the working spaces, they actually have classes on the stuff. The most important thing about, to understand about LLC from my understanding is the LLC stands for Limited Liability Corporation. So if you're trying to limit your liability a freelancer, let's say you're working on one of the things I stay away from is like, baby products. For example, if I'm designing a stroller and someone gets hurt using that stroller, they could potentially sue me as the engineer. So, there's ways to structure contracts so you don't need an LLC to limit your liability, I think. But basically they would only, if you got sued, they can only go after the LLC, not your personal assets as an individual. So, from what I understand, there's the tax side of it but there's also the liability side it's one of the most important reasons to start an LLC is if you want to create a separation between your personal assets and your business assets.

Joe: That's kind of the unknown realm of like, beyond engineering, you know, we're all taught math and science, but we're not really taught about the legal challenges of designing products or handling financials or anything like that. I also am curious about if you don't mind talking a little bit about how you were able to maintain financial stability throughout the year like that. Are you consistently getting projects or do a little bit come in at a time and then you have a break and then more come in.

Jason: That's a really good question. So I mean, would you guys be comfortable if I just share the numbers with you guys? Would that be helpful?

Sam: Sure, whatever you're comfortable with.

Jason: Yeah, I mean I'm pretty open about this. The first year freelancing I made about 20,000 just gross, which is not a lot. Living on that has been challenging. But I also started out with a lot of savings and that runway sort of gave me that ability and then I really did, I debated moving back in with parents. I've just decided to re-sign this lease for another year so it's a bit of a gamble. My savings are not nearly as good a shape as it was when I started out. But, and I've invested, I've made a lot of mistakes. I bought a really expensive -D printer, and now looking at it today I'm like my Prusa mini doing just as good of a job. And I'm like, did I really need to buy that? But I, so you sort of end up challenging a lot of your own ideas about how the formation of a business should go, but and then as far as like the clients and the consistency of the work. Originally, I had actually found one or two really good clients. So the first thing, my first job, this is actually pretty common was like $50 and I probably spent like 10 hours on or something like that. So I probably made $5 an hour and then overtime it was like, okay now fifty, a hundred, a hundred fifty and these are all starting on up-work and eventually I had people wanted to hire me hourly for bigger scopes and the first one, was on actually the football project I mentioned, I was working on a project where the guy wanted to, I work at a very technical client and the project was about five thousand over the course of a few months. And that was my first contract. I was like, okay wow, but my hourly rate was really low. I started with a really low hourly rate cause I a, I didn't have the self-confidence to put it for higher and b, I wanted to compete and I wanted to just see if I could make money this way. So I started out billing around, 25 an hour and then now I'm at 50 and hour. I've basically doubled that and that's allowed me to work less. So, now I work like maybe 30 hour weeks and then try to build 20 hours a week. And then as far as consistency, originally I was taking on huge projects but there I only had like two clients and one of the downsides of not having a lot of clients is that when one of them leaves you are really out of luck. So what happened in May of my first year, I started in September, was that it kind of like hit a point where I've made, like maybe I think I made like two and a half K in December, and then went to 800 and I was like "Ahhh! Crap, what do I do?" No sorry it wasn't in January, it was in May, so and that's when I realized that I actually wanted to shift towards having more clients with less, kind of small time commits per project, and that has become my new business model. So when I have a client onboarding, basically I say, "Hey, you know, do you want to do 5 hours a week? 10 hours a week?" We cut a rough commitment up front and then I sort of have like kind of always clients coming in and out of the pipeline now, whereas I used to start out where it was really like I was like, kind of high, it was a roller coaster. It was a huge roller coaster. So yeah. I hope that helps, for me the financials are really important to talk about because there's a lot of stability in working full time you don't have. Knowing and hopefully for people listening, I don't know if my experience is an anomaly in that, making that much is a huge thing or not a great thing. I really don't know where it's except. I'm quite proud of it and I've been able to live off of it and I've been able to set bigger goals for my next year and people do say freelancing seems like the exponential growth. I think it's a huge cautionary tale in that it can be and cannot be. There is no guarantee that I'll even make that much next year.

Joe: Right and we took a look at your online portfolio. And obviously there has to be some kind of personal marketing and self-branding that goes into it. Can you talk about a little bit of that?

Jason: Yeah. I'm actually looking to rebrand a little bit. So I have Jasonmarktoby.com, that's my portfolio and then Mobius Prints is the side kind of brand I run and a lot of freelancers sort of have a personal brand and then sort of a side hustle sort of. As a lot of us are still experimenting on a lot of people in my community are soft of more in the graphic design, copywriting, video editing, brand design space. I'm one of the only mechanical engineers in the community, there is another guy, he designs 3D printed lamps, Sean Wouge from wouge.com. Great guy, he's in the freelance founders community, we kind of bounce ideas. He's got some Prusa, whenever we video call I see 3D printers in the background, but it's kind of rare. So, yeah, so I think the thing for me is like the challenge of do you put effort into a personal brand or do you sort of operate under a moniker. Like there's a, I'm reading this, I don't have the poster or the book but there's a book I'm reading called Run Studio Run and it's written by a guy who inherited his family's copywriting business and they're called a hundred monkeys. And they do specifically naming for companies that is

their whole business. I think they're making fun of the hundred monkeys of the copywriters will come up, or typewriters will come up with anything. I have, I'm looking to have actually rebrand my brand is called Mobius Prints. And I'm looking to call Mobius Makes and I'm looking to do more content creation. So I think for me, I'm in the middle of that journey but early on I didn't have any of that. Actually to be completely honest, early on I wanted to just do, just the Mobius Prints. I wanted that to completely operate under the moniker and have sort of, all the revenue was originally going to come from selling 3D prints. I was just going to try and run a print farm from my apartment, and then that's turned into freelancing by sort of mistake. Upwork turned out to be more financially viable than that. So I'm but I'm still slow baking, the, that figuring out where that business sort of things could go. So, I'd say that there's a lot of different answers to your question. For me it's about communicating your value to clients. So I do that best under my own name right now. At some point I'd like to explore trying to create lead generation through these other platforms, but and there's no really, no one right answer. But I think the thing I've heard is that if you're in doubt, just use your name. So, for me, I found that, so, my portfolio now focuses, it's most an engineering portfolio. I actually put that portfolio together when I first moved to Chicago, to get an engineering job, but I always knew that I was looking, I was sort of a designer and engineer, and I had to kinda balance the two. And now I feel like I'm becoming more of a designer and I'm restructuring my portfolio to try and say that instead of saying. Like right now, it's very wordy, there's a lot of text. Engineering portfolios tend to follow a problem, solution result format. You don't really do that as a designer. Its just kind of result, if you can explain it all, that's great. But it's really focusing on the pretty pictures I feel like and trying to build more of that. That might show how much I have to learn about designing things and being a designer, but that's so yeah, long answer but in sum I would say you sort of have to position yourself where you are and then figure out where you're going and then come up with a whether it's your own name with a website, or you even just a business card. You know, it really just clients, give them a preview of what you do. There's a lot of thought around portfolio design and a lot of things I'm still working on myself. So, yeah, definitely the middle of that.

Joe: Building off those two roles that you mentioned between being an engineer and being a designer. Can you talk about if you can pick, can you talk about what your favorite project that you've worked on, has been whether it's engineering or in the design space, something that you've enjoyed most in the last year.

Jason: Oh my gosh, there's some days where I look around, I have a 3D printer. I have a little kitchen island that I've turned into a benchtop. And I'm like wow, I'm kind of doing it and then I'm like also, you know, still trying to pay bills and things too. So I'm looking at these two things in kind of comparison. A favorite project though, I feel like, it's tough because some of them I can't fully disclose. Is it okay if I go farther back than just freelance?

Sam: Yeah of course, it could be like a co-op or anything.

Jason: I was thinking my capstone.

Sam: Yeah, perfect!

Jason: So my capstone was this solar desalination machine, it's on my portfolio. What happened was, we were just the third group to work on the Capstone, there were two groups before us and they had left us a product that, it worked. It was really well designed but I also didn't actually work when we put it together. It was a massive contraption, like a giant sword, basically a solar still with a mirror that had to move to track the sun and it was really convoluted and cool. And at first we were like "Oh this is so cool." It ended up being a very difficult capstone project. We were, we were all kind of frustrated from lack of progress and so my job was to fix this clock. And I'm not, the cool part to me was the way I solved. It was three months though first of just head against the wall. Like, how do we? I don't even know what a mechanical clock, like, what does that even mean? And it was really just kind of a construction issue. They hadn't built it according to the plans. The problem was the plans were from this book from like the eighteen-hundreds-nineteen-hundreds. I had to like, I actually went to the Snell Library and like took out books. I went to this great coffee shop off of Tremont Street, I'm trying to remember, they only did pour-ups and stuff, really good spot and I was sitting there and I was looking at all these I had, like, all these papers and books in front of me I was like, oh cool. I'm kind of doing the engineer research thing. I felt very self aware of how it was impacting my overall

career trajectory. I think this is actually the first time in my engineering school where I have no idea how to solve this and I have no idea who I can go to. And in hindsight that actually did, set me up well for freelancing cause it's like that a lot. And I just kind of realized that sometimes you get your, Cristo in the future podcast calls it "The Dip" where you're just like at the bottom of a valley of knowledge and you're just like, I have no idea how to get out and just took 3 hours of staring at these old clock things. And I finally realized what they hadn't designed right. And once we made the adjustments it was like smooth sailing from there. It was like, what side of the, it was like that kind of critical moment of self-doubt. I think that's where a lot of the mental health stuff comes in. I think it's where support networks come in. I think that's where, I'm not really a big fan of like, you know, you have to be in those situations to grow. You don't have to be uncomfortable but it helps, it can be a good catalyst. So that was a good, that project and then so, what ended up happening was we were able to build the things that we needed to build to make the adjustments. It worked. And that was, my team was very happy to have one part of a working and cause some of the other had specs have been stalling it and they were able to will pull out the other aspects together. We got to do a presentation of everything, but our Capstone project was one of the most harrowing experiences as an engineer I've ever had, but I think it was good, like Capstone is good, you know, you're not going to get fired from a job if you fail but you might not graduate at the worst case, so we weren't actually in danger of that. But you know, there's like that fear after working so hard and everything and yeah, Joe are you nearing that point yourself where you're going to be doing Capstone stuff?

Joe: Yes, actually my first half of Capstone is going to be in summer 2 of 2022.

Jason: Cool, good luck!

Joe: And I'll finish it in the fall. It's coming up.

Sam: You can use your Nerf skills to work on it.

Joe: Right, yeah some of my friends, some of my close friends are graduating along the same track, so hopefully I'll get to work with them too. We always kind of work in a good environment but

Jason: That's good.

Joe: I'm excited. You know, I've heard a lot of stories of people's experiences. I've heard people pull out like incredible projects, so there's that tiny bit of pressure, but I'm looking forward to it.

Jason: Yeah, turns out it ended up being a great story for me, looking back at the time. It was really challenging but I know, I mean, I feel like a lot of my really good engineering projects. They're not necessarily my favorite projects in the sense of like, was I enjoying every aspect of it? No, I was really stressed about not getting a good grade or pulling out a good results, but also was like, really, really excited to have the opportunity. The hard part for me was like, oh, I got this. A month later I tried three different things, they didn't work, two months later, now I'm realizing that I actually needed help and that I wasn't smart enough or smart's the wrong word. Like I didn't have the right combination of experiences and skills to solve the problem and like, that's okay. And that's part of the process in kind of having a humility, as an engineer to say, like they're sort of like idea that there's like an Ironman or an Elon Musk that's going to come in and solve everything or even a Steve Jobs, like none of those people did it all by themselves, like you are just one person. And if you have great friends that you're going to enter Capstone with, I have to imagine it's going to be an area you can lean on cause I know I leaned on my capstone team members to get through those times.

Sam: I love that mentality because, you know, as engineers is the one of my favorite things about being an engineer is like that moment where you like realized like the answer, like a solution, like, how you were saying, like you're just stuck on this for like 3 hours and then a couple weeks and then like months and like you're just so frustrated and stressed about this one issue. But like your mind is just so determined on like solving it and then the moment where you finally like get that and like you realize like, oh like I actually figured it out, is the best feeling in the world. Even

if it's not your favorite, you know, project or whatever it, maybe it's just like that moment. I was like, wow, finally did it, you know, after all of that, all this hard work is paying off.

Jason: That kind of realization.

Joe: Yeah I was talking to a friend earlier actually about this. That during my sophomore year I was in a statistics course, but it was heavily using Matlab and I was sitting in my apartment with two of my friends or three of my friends working on this code and no one could figure it out and I get migraines sometimes and I ended up getting one at the worst time. We were, we were working on our final for the class. And so I was like, "guys, I'll be right back. I'm gonna go take a nap." So I went, I took a 30-minute nap. I got back up. I walked out of my room. I was like "I got guys. I figured it out" and we sat down and within the next hour we were finished with our final and it was just one of those things that I needed a little bit of a break, I needed time away and we got right back into things and we were able to finish it as a team which is really cool.

Jason: You know what I've found though is that, that sorta of mindset that you need to be taking an inspiration, to create creative things is very common in art, but it's not very common in engineering and I think actually one of the benefits of freelancing is I've allowed my it's like, I've been able to position myself as sort of both and I found I do a lot more like I have now a little bit more validation on mind. So if I take some time to draw and just learn sketching better. Like thinking about those things, so I actually realize I sort of want to go into the sort of Industrial design is sort of the next step for me. I've been thinking about potentially going to graduate school for that. And yeah, I think that sometimes you can even find that like being and in those the dip or whatever you want to call that moment of not having the answers. You can actually find whole new skill sets that solve, that get you out of those things. But like, almost parallel paths that can help guide you to even new interests to like a lot of that for me and a lot of that has also been asking myself: What more can I do for clients? Like I've delivered the CAD model. Can I also work on the rendering for them too, you know, and things like that and have you also see when you're on upwork like: Oh there's a job, there's people who just want packaging engineering, there's people who just want visualization. There's people who want, one of the guys was telling me if you just get into textures for video games. Using your 3D modeling background, you can make a whole business off of that, I'm like Oh! So doing it in the context of freelancing, like every project has a dip, every project has a moment. I have one right now, my bench is an absolute mess right now cause I'm trying to assemble a brush for an eyeshadow. A brush where you can change the shape of the brush head. And I'm completely at odds with how to get the mechanism working. And I have to tell the client. "Hey, we put time into it and we didn't get the outcome we wanted" and that's a part of the business world too and some clients are surprisingly okay with that. It can go, it may not go well, but I at least have a year of experience on my belt. And going back to Capstone 2, that is a pivotal experience too and like co-op experience. Saying "Hey, I've been in these situations before, it's been okay," and I think Capstone can really be, no matter what your experience is, Joe and Sam too, when you get there. I like I know you'll be, it'll be awesome, like, in the broader scheme of things. You'll definitely have like challenges and then hopefully breakthroughs, but even if you don't like, they'll still be valuable.

Sam: Exactly, the worst thing you can say is like, oh, I tried, sorry it didn't work. But at least you tried, you know, you had that experience and like you put effort into it.

Jason: Yeah and you can also come up with the way like we actually know what like won't work and there's a lot of learnings from that. And so trying to make every iteration, make an exploration, learn something from it, and then make it better for the next one. If you can show whether it's a client or a boss at a job that you're trying most of the time, that's okay and it's not, okay, you kind of have to build enough of an infrastructure in your life, to get back up after that and that has been one of the big challenges for me. And I think I know a lot of people my age, I'm 27, that are out of school I was talking to a lot of the folks at the networking event for Northeastern last night about that sort of aspect of the adult thing or whatever you want to call it. But it definitely starts in college. It starts maybe earlier than college about that sense of self, you'd asked about entrepreneurship. I think there's sort of a sense of self element of it too. And I think when you're in those situations you like, you're like Oh, like what am I going to do? You're not always going to get out of it by yourself and I think, words that kinda came up when you were talking, Joe, about it. There was

this word that this guy Ben Carastik my teacher at the Ryder Hall class, the design class. I took at Northeastern my last year called 3D Fundamentals. He said trust the process and so the process involves being lost. But yeah, all of these things are part of it, so it's exciting but also very scary.

Sam: If you could go back in time, would you do anything differently?

Jason: Yeah. I think I would take more art classes to be honest. I, I would go back and try to nurture that part of myself earlier on, now that I know I love industrial design and like, I actually network with these two engineers who studied mechanical engineering and then went to study Industrial Design as Northwestern, here in Chicago. They were both part of that M-Hub Makerspace. And we have his monthly call and I'm always asking about things and I learned about, the other day. They told me that they create mood boards for clients. Some of that stuffs just going on Pinterest and looking up stuff and like that can be a part of engineering. So learning about those things, to me is just so cool. I don't know.

Sam: I love Pinterest and I love mood boards. I didn't really think that was a part of like engineering really but it makes sense that it's design. So it's just interesting.

Jason: Yeah, maybe more in the design end but industrial and design conventionally, I remember when I was working at Hasbro, we had industrial design interns. At some point the industrial design becomes a mechanical engineering project. So like as a mechanical engineer you might not know that there was a mood board at the beginning of project, where the customer looked at white sleek assetto, dark map colors and look at different products out there. You may not know that that was a part of it, but you will get the enclosure. There might be someone who does surface modeling and you're now coming in and trying to figure out where the screws need to go and stuff. And so there might have already been that work done and you just didn't know so I think yeah, sorry, I remember your question was what could I would go back and do differently? I mean I couldn't have known then cause I was coming up from woodshop, you know, high school. That was a, you know, I didn't know about things, like mood boards or like sketching or a huge thing now actually, it's popping up in UX, and human centered design is doing research on your target customer and really getting to know your customer before you even make anything at all. And so having an engineer like I'm listening to former engineers who are giving presentations on, they haven't made anything in the shop if you know, but there they understanding their users to see what they're looking for. So realizing that there's a broader world that engineering actually is just one piece in, and that even in college you can start to break beyond that world and oh my god, Northeastern is such a great place for that. Like entrepreneuring is such a great, as an entrepreneur your essentially, not just an engineer. You're closer to the center of that circle where you are at the Hub. You have to join together a lot of different things to make anything. So, yeah, it's kind of a non answer cause I don't know exactly, there's not a concrete thing, but I think I'd try to take more design classes, I would try to draw more, I would try to make more things that weren't just engineering and encourage and let the parallels come naturally. This is going to be kind of be an off topic thing, one of my favorite things is actually to play Super Smash Brothers. I still play, I actually found a competitive community in Chicago and when I play that game sometimes I think of totally new ways to approve client problems. So I tell my younger self "Hey it's okay to do stuff like that and still be an engineer like an engineer doesn't always have to fit in a one size fits all." It could be using things that are outside of the box too. And it's okay to then spend time and nurture those passions earlier on. So once you get out of college or not. Like you don't feel so lost. At least for me that definitely impacted. It's been a journey. I've been on since .

Joe: Yeah, I think a lot of people always say, I wish I would have started earlier, but at the end of the day like you can always just start right now. And there's always going to be more time to learn and grow and develop and you know, you're ahead of us in this process, but you're doing it, I'm doing it, Sam's doing it. So it's just, we're always on this like, never-ending journey of, of learning and growing. And I think that's really valuable.

Jason: And some people might even say that is what entrepreneurship means to them.

Joe: Exactly. Jason, I have one last question to leave you with. What is your five year plan?

Jason: Oh, man. I mean I've always wanted to try and bring all my things together and make a coffee shop where you can 3D print stuff. That's also Design Studio. But right now, I'm just trying to, sort of this having a little bit of my feet on the ground as a freelancer. Looking at the business side cause I'm now the owner of this, and really there is sort of a business aspect to it that you should have to learn and then focusing on that for the next five years. I would say would be great, if I want to have my own studio space and then I can actually hire interns. One of my long-term goals is actually to try and find engineers who want to learn more about creative things and then try to, like, help them grow, so to help someone else avoid the struggles I went through, it's like trying to find my creative passions and stuff. I would love to one day be able to do that. There's also another path I see myself going down, and that's just going to graduate school for being an industrial designer. And have this freelance journey needs to sort of the point where I learned that I want to do that stuff, and then go back into conventional job, but more work in the creative agency and consulting side. So that's sort of something I think about a lot. Both I feel like are really cool exciting to me, going to graduate school obviously has some invitations for financially and figuring out where I want to go. And then sort of that and certainly considering a Northeastern there as well, I do miss Boston.

Sam: I was just going to say you should definitely consider Northeastern for your graduate school, you know, come back to Boston, see Ted, see the Sherman Center.

Joe: Come back and help with the Sherman Center.

Jason: I would love that, I really would. Yeah. I think being, seeing how it's grown over the years and it's really cool to have a chance to like, even just see, even just being able to see you guys virtually like this is really neat and just kinda to be a part of that. But yeah, I think giving back in and teaching in some way is definitely a part of the ten year plan. Like, I've been debating starting a YouTube channel and trying to, is also a way to bring in new leads and stuff. But really, I'm just trying to find a way to bring every like, all my interests into one big bubble cause I have found a lot of purpose in that. There's definitely been trade offs some compromises that I've made to get to the point where I'm at now and I'm able to ask myself questions about how do I bring these different things together, but yeah, I would say in a potentially trying to either start a design studio on my own or join up with other designers to find something, that would be the dream. But you know, for me I'm pretty open. I want to, I was very close to moving out to the Denver area recently because I loved the combination of the outdoors and there's also a lot of great makerspaces and I have a, my friend Katie Kerr, who was the vice president of the Makers Club for a while, lives out there, my buddy Neil is out there, and yeah, for me it's sort of like I'm in my late twenties, which is infamously known for trying to figure out yourself and all that and trying to find a way to do that in a steady way and hopefully to good things in the future. I don't know what exactly beyond that. But yeah, I hope that was an okay answer.

Sam: That was perfect. I love how this entire episode, you know, has come full circle with your time in the Sherman Center when you were literally teaching other people how to make, you know, products or how to disassemble something or how to reassemble something, you know, and that's the one of your future goals, how you want to continue that. So, like, how your life goals have always stayed so determined, and passionate, and, you know, driven.

Jason: That sounds very good. I mean I've definitely had days where I wake up and I'm like "I don't know what I'm doing."

Sam: We've all had those.

Jason: But yeah, I think that, you know, when you think about what got you into engineering in the first place, I think that's a good source, for some people. it may not be like, they might just want to make money or something, I don't know. But that's valid. Like it just living and existing is great. But if you have sort of that goal of, I want to actualize something. I think entrepreneurship engineering can be really good way to do it, but it can also be really hard because engineering usually exists within the context of institutions. And that may be an issue. And for me freelancing has been a ways to get around some of those things. But also I've had a new challenges, news problems that have come up. So there's no real answer.

Sam: Jason, we want to really thank you for taking your time out of your day to come on to the ShermCast. We really appreciate it and we loved getting to talk to you, you know, your passion for engineering and product development is honestly encouraging and very inspiring not just for me, but I'm sure for like our listeners who are either in Generate or just like looking to either freelance maybe or, you know, just looking to be an engineer or work in entrepreneurship.

Jason: It's been an honor being on this, the podcast. It's such a like, to see The Sherman Center even doing a podcast. I've also, podcasts have been great for me over the pandemic. So I think it's a great medium for these types of conversations, but it is, it means a lot to me to have the opportunity to tell like, students about the journey. I had no idea that freelancing was a thing when the pandemic started, I'm so grateful that I found it, I definitely don't think it's the right thing for everyone. I think there's a lot more to it and things we didn't discuss in the podcast, in this episode today. But like, I think that it's, it's a whole rabbit hole to go down, there's many podcasts, just on freelancing. If anyone's listening and they're curious, I would recommend Steve Holland's freelance podcast. I think it's, they specifically focus on how people got started. Not a lot of engineers in that space. So, you know, if you're interested in being a freelance engineer, know it is a bit of a road that you have to kind of carve out for yourself, but there, it can be really valuable. And I think there's also a lot of aspects in freelancing that anyone can learn from that, whether you're working a nine-to-five or whatever it is, and it really doesn't, like everyone's a freelancer, everyone's in some regard and everyone's got some aspect of their life that they're sort of not in control of and I think that's that's okay, too. So, yeah, I obviously I love talking about freelance, I could go on about that for many, many hours. Thank you guys for having me on so I can kind of rambled on about that for a while and I hope it was valuable to the listeners of the podcast and you guys.

Joe: Honestly it has been such a pleasure having you on. It is absolutely crystal clear why Ted speaks so highly of you and I want to ask, is there anything you want to plug for our listeners?

Jason: I guess, yeah, if you guys are coming with this. I feel like for me, if anyone knows anyone who's looking to build an invention or they themselves one. I offer free consultations for my freelance services, you can reach me at Jasonmarktoby@gmail.com. Check out my Mobius Prints, Instagram Channel. I am constantly trying to figure out where to take that next and check out the Freelance. Founders Community I'm a part of. That's been a huge thing for me and I point it back to you guys. If anything in the Sherman Center, I think of that there's very few organizations on campus that do help set you up for freelancing better than places like the Sherman center, like the entrepreneur's club where you can really get a sense of. Generate, I was a project lead and worked, had a team of people like really awesome folks, like that was really cool. Like those experiences are really valuable that like, yeah, there's some stuff I'm working on and, you know, always looking to grow and if anyone listening to this podcast and wants to have a conversation like please reach out to me, just Jasonmarktoby@gmail.com. I love talking about this stuff and I'm happy to share what I know and I offer you any insight. I can give and then yeah, on the freelance, I'm always looking for new clients. So if this sparks anything, that would be great. And then yeah, back to you guys. Thanks for having me, I think that just to kind of add that I think a lot of what you all do, maybe setting the stage for people to go freelance potentially and find some higher level of purpose in their engineering education.

Sam: Thank you for that. I mean that kind of our goal here on the ShermCast is to educate people. And you know, I hope that's what we're doing here. But we wanted to thank our listeners for listening to today's episode, to follow us on Instagram to get updates on our new episodes and @nushermancenter, to check out the Sherman Centers website, northeastern.edu/shermanto view our calendar events, to find out how to subscribe to the Sherman Gazette, which is our newsletter. And I read our podcast transcripts and also check out Jason's portfolio and his Instagram at Mobius Prints. But of course, everything will be in the description below and be sure to come back in 2 weeks for our really exciting episode. And we'll see you next time on the ShermCast.