Jaewon Drake (00:03):

The following interview is conducted as part of the Georgia Institute of Technology's Everyday Georgia interview project. Today is April 9th, 2020. The interview is taking place on BlueJeans. The interviewer is Jaewon Drake. The interviewee is Matthew Dick. Matthew Dick is a prototyping instructor at the Makerspace at Georgia tech called the Invention Studio. Thank you for participating. Um, so to start, where were you born and where did you grow up?

Matthew Dick (00:34):

Uh, so I was born in Palo Alto, California. Um, and, uh, essentially I ended up, I ended up actually growing up in Memphis, although, uh, before my parents divorced, they, uh, hopped around from place to place first Alabama. Uh, then I ended up in Memphis. So that's where I belong, that's where I ended up.

Jaewon Drake (00:57):

Awesome. Uh, could you tell me about your education or career experiences?

Matthew Dick (01:05):

In terms like, like just throughout my life or do you mean kind of, um, education wise, uh, when I came to Tech, um, or before I came to Tech, um, was kind of mediocre at best. Um, I went to a, uh, kind of cru-, uh, kind of cruddy high school. Um, like it was decent for where it was at in, you know, a lot of stuff. But, um, if, uh, I tended to compare, once I got to Tech, I kind of compared myself a lot to the, uh, other kids at the school and that, um, wa and, uh, based on that, I definitely didn't, uh, I didn't have as high quality as a, uh, uh, like primary and a high school education as some other people might have. Um, although it wasn't like completely terrible, uh, I did the IB program, uh, at my high school, uh, since we didn't have AP. Um, and so that's kind of how I got a lot of my, uh, um, kind of college prep kind of work. I know a lot of people at this school, at the, at our school do a lot of like, um, uh, yes, I think it's a dual enrollment. Yeah. Yeah. A lot of people do that. And uh, yeah, I, I uh, did not do that. Um, but yeah, and then career wi- and then, yeah. So most of my teaching personally really came from like how I got the skills at tech that I have now. Um, when I first came in, I had really gotten a lot of my skills from just like doing things on my own. Uh, cause I did a lot of, uh, work, um, on things outside of school. That improved my, uh, my, uh, like knowledge of my career since I was pretty passionate about aerospace early on. Um, and that's part of the reason why I got into Tech, I think because I did a lot of, um, I did a lot of huge extracurricular projects and that, uh, apparently seemed to have attracted Tech's interests. So I was pretty satisfied with that. Um, career and then career-wise, sorry. Um, career-wise I did a couple of intern. I did like internships with like the army mainly just cause like I got the opportunity from like my research, uh, advisor. Uh, so that, but I haven't really, like I haven't been able to branch out unfortunately in terms of, uh, like my internships. I've only really been to like one company in that or not even a company. It's a research lab for the military. But yeah.

Jaewon Drake (04:20):

Could you tell me about your personal projects before getting into college?

Matthew Dick (04:27):

Uh, yeah, so I did, um, a couple of them. So one of them was, uh, starting the was for like this physics, it was for this physics assignment. I uh, had to, we had to like design a bridge out of, um, I think it was Popsicle sticks. Um, it's, it's a pretty classic, uh, but what I decided to do, cause everybody else was just

kind of like building bridges and then you know, seeing if they fell apart or not. Um, I decided it would be, uh, I had kind of a big brain sort of moment and decided to, uh, uh, try actually doing like full on analysis. So I actually tried learning statics, uh, when I was in high school. Uh, which was really neat, which was I thought it was really neat cause I had never heard of statics in my life. I literally did not know that that was a thing. Like, um, and so, uh, color me surprised when all, when I, you know, open up the, um, when I started working on it and you know, it turns out, Oh actually there's like this whole like, you know, uh, subjective study about, uh, this stuff and it's called statics. And I was like, Oh, that's pretty cool. And so I ended up actually doing like a full analysis and I ended up because of that, I ended up designing like I think, I think the last time I checked in with my physics teacher, it's still technically the most efficient bridge that people have built there because of the fact that I built, um, I think it weighed something on the order of like, I think it was like seven grams and it was able to hold like 190. It was pre, it was, uh, I was pretty proud of that. And then there was my extended essay project I had to do. Um, it was so, and I don't know if he's done IB, but in IB there's this thing called the extended essay and um, it's kind of a meme. So essentially what it is is that you have to basically do a, it, I guess the best way to describe it is, um, it's like the huge typical like semester project where you have like that you have in our classes now where you have to like do like a full fledged like research project and it's like, you know, 10, 15 page paper or sometimes like 20, 25, you know, you know, you have like one of those huge assignments. Right? Well this was essentially that, but for like high schoolers. So what I decided to do, um, not the wisest decision at the time but was because I was like really into aircraft, uh, aircraft, uh, aerodynamics and stuff. So I was like, Hey, why don't I try doing uh, a wind tunnel? Cause I had saw there was like a really high scoring. Uh, cause I knew I wanted to do physics at the very least. And I saw that there was like this, uh, it was a thing that said something about like, um, uh, I'm trying to remember what it said. It says something like the guy had gotten like second, uh, one of the highest I think. Yeah, I know he did get actually highest marks on it. And I was like, Oh, that's so cool. I want to try that. So, so I decide, all right, I'm going to do a wind tunnel. And I talked to my physics teacher and she's like, uh, uh, no Matt, that's way too complicated. Um, you don't have any background in it. And I was like, but isn't that the point of learning it? And she's like, no, no, you're supposed to just like, you know, kinda like, you know, use this as an opportunity to just kind of like boost your grade. And I was like, that seems kind of dumb. So I decided I was just gonna do it anyway. But I got my, uh, my philosophy teacher to be my advisor because it turned out, uh, she, uh, she had told me that she actually had a, um, like I think it was like her brother worked at Lockheed and so he was saying that he was going to try to help me out and stuff and I was like, okay, sick, so I actually have like a way to do this. Um, and I ended up spending and it and the thing is like, you maybe thinking like, wait, that sounds just like an academic project. Um, thing is that like at the point that I was doing it, it was less about like my grade than it was about me just simply learning it. Uh, cause my grades at the time were good enough that like, even if I had gotten a bad grade on the extended essay itself, um, like if they had graded it poorly, um, I, I wasn't like in danger as you know, having a issue, you know, it was just a matter of like, I just really, really want to try this. So I was like, okay, I'm going to send it. So I ended up basically just, um, making a, uh, you know, just spending, I think it was like what I was like a couple thousand hours on this thing and I ended up finally getting it to work. I built a whole wind tunnel, um, from scratch and like designed it, um, in my dad's garage. Yeah. It was really, really cool. And it worked pretty, it worked decently well. Um, the only problem was, is that a couple things happened. One, I actually cut my finger, uh, cut the tip of one of my fingers off, uh, while building it. And in addition to that, I, yeah, I, I D I bled a nonsignificant number of times for that project. Um, a not insignificant number of times. Um, and yeah, so I just, uh, uh, that's pretty much what I ended up doing. I ended up building this huge, uh, project and, um, I wrote all about it in my, uh, uh, GT, uh, application. That's kind of why I think I got in cause, um, when I sent in my application GT was like on it, they like sent it in almost like immediately. And I was like, Oh my God, that was like insanely fast. Um, yeah, I was really, really proud of that. Um, that was, uh, one of the like one

of the big achievements of my, uh, especially when I finally got it done because, um, I spent a lot of time just like panicking, thinking I was never gonna get done because it was just, it was a lot of work. And, um.

Jaewon Drake (11:27):

Yeah, I mean, even for a college student, that would be a lot of work.

Matthew Dick (11:31):

Yeah. It was, I basically made myself do capstone in high school. It was like, there was actually an a, and the only reason I like say that someone might be thinking like, Oh, that's, you know, that's great. You know, there's no way it was like that bad. It was like, well, the thing is, is that like there was a capstone done by one of my friends who's also a, he's a former, uh former PI. Um, Jay Stelker, um, people might have in, uh, whoever hears this, might've heard of him because he actually built a, um, he built a Back-to-the-Future DeLorean, uh, in the Invention Studio. Yeah. Like there's a, the Invention Studio has a huge culture, huge culture of like making crazy stuff like that, which is, it's, that's kinda how I ended up there is just because like, people just build all these really, really, really cool projects, um, that are just like absolutely amazing. Um, like, um, you know, like they just build the most outrageously cool things I have like ever seen in my life. And yeah. Um, I also did like a couple, like I, I did like a couple of projects where I, uh, like, like, you know, model rocketry, you know, the classic like STEM type stuff. Right. Um, yeah, I did like some like model rocket stuff. Not much, but, um, and that's because unfortunately my family didn't have enough money to pay for things like, you know, uh RC plane stuff. I actually, yeah.

Jaewon Drake (13:12):

So was that kind of outside of school?

Matthew Dick (13:15):

Oh, the rocket stuff? Yeah. The rocket stuff was all outside of school. Yeah. It. Um, yeah. And um, pretty much like, the only reason I, I guess like I still consider that extended essay to be like an outside school thing is just because like, um, my advisor was purely there to just like, look at the paper. Um, but he never like or, or she never, because eventually, uh, we got a new physics teacher, so I had to go to him as an advisor, but he didn't really like look at the paper or no, he did, but he, he didn't actually like grade it or what am I saying? No, he didn't give like technical advice. He kinda was just like, yeah, this looks about right. Uh, yeah, send it. And I was like, okay, cool. So like, yeah, that's, that's basically, um, kinda how it went when it came to like personal projects, it was really a lot of like me just taking, um, projects assigned by school and just going like, I'm gonna make something hilariously over complicated because I want to learn things and then I would die from it and perish. And I was like, wait, why did I do this? And I was like, wait a minute. I remember why.

Jaewon Drake (14:31):

Awesome. Well thanks for sharing. Um, so moving on to the Invention Studio, uh, could you tell me about how it came to be?

Matthew Dick (14:41):

Oh, so that's, um, that's quite this, that's actually quite a story. Um, I guess like get comfortable. Um, so from- the thing is that I actually wasn't around when the studio was founded. So what I'm my, so my

story is essentially just what I know from alumni. So like if, uh, if you're willing to accept that answer, then I'll continue.

Jaewon Drake (15:14):

Yeah. Yeah that's great.

Matthew Dick (15:15):

Uh, if you're not, then, uh, we can, you can ask me another question. Okay. Cool. All right, good to know. I just want to make sure, cause I don't want you to like go like, wait, uh, wait a minute. Hold up. Like he's, uh, okay, cool. Great. All right. So, uh, basically, uh story begins in like, uh, 2008 and basically, um, a bunch of guys got together, um, and decided that they were going to create a club where, uh, because they kinda got sick of the fact that in, at, uh, for a long time at GT, uh, GT was actually a lot more like MIT where it was a lot like theory based and they wanted to be able to like apply their coursework, um, to like projects that actually had like meaning. And so what ends up happening. Yeah. So what ends up happening is that they basically, um, created, yeah. And, and just also again, once again state this, um, this is based on, um, what I remember from the alumni. So like, if somebody looks at this in the future and is like, wait a minute, that is completely [false]. Like don't say, I didn't warn y'all. All right. Wait, back to the story. So, um, so I what for, what am I saying? So what ends up happening is they end up, uh, basically getting permission to get like a classroom, like an old, dingy classroom. Um, and the cla-, and they used the classroom for a long time, um, and basically just started slowly filling it up and, um, you know, uh, and it continued like that for a long time. It was just kind of like very, very slowly expanding. Right. Um, and then, um, a girl named Veronica comes along. Um, and, uh, I, I, I know Veronica, uh, personally, and she essentially came in and saw that like, and she wanted the studio to like, grow, uh, right. She realized that like, the studio had a lot of, like, amazing potential to like grow, way bigger than it was at that time. And so she was like, Whoa, this is, this could be like, like the next big thing. Let's like, you know, let's like figure out like a rule book for this, because, you know, we're having issues as we're growing and growing and, uh, you know, we gotta make sure that we're not like, you know, set up for like a lawsuit or something, you know. So what ends up happening is, uh, she, uh, she basically ends up writing the rule book for, um, pretty much all academic makerspaces that you see in the world. Um, yeah, it was, it was insane. She literally, she, I think she told me she spent like several semesters on this. She was the head of operations at the time. Our, um, Mmm. Uh, hea-. Our head of, she was head of operations and she like wrote out this whole, or she might've been president when she wrote that policy, but basically she wrote out this like, really expansive, really, really, um, well detailed, well thought out policy about like, you know, um, what does studio do in this case? How do we hire people? Right. She ended up coming with, I think I mentioned this to you when I tried to convince you to join the studio, uh, the, uh, checklist, uh, she basically figured, yeah, she figured out that like, you know, having, you know, resume checks is a terrible idea. Um, because that pretty much just alienates the, um, uh, it to the population of tech that like only cares about grades.

Jaewon Drake (19:32):

Right.

Matthew Dick (19:35):

So, yeah. So essentially she just like, uh, you know, uh, you know, just starts. Um, she, she ends up making this policy. And, uh, after that, the studio just started really just growing and growing and growing. Um, in fact, MIT, uh, I th I think she told me it was MIT or some other big university basically

took her checklist and kind of like said like, Oh look, I made a thing about how to make student maker spaces, stuff like that. So yeah, like I can't remember which university it was and uh, whoever is looking at this in the future--this is not like a legal call out. I do not. This, uh, this statement is not legally associated with the studio in any way. I have to say that sometimes cause uh, um, you know, sometimes people, uh, you know, interview PIs when, uh, yeah, you know we talk about like these kinds of stories we have to make sure that people know like, Hey, uh, Hey, Hey, don't sue us. Yeah. So what ends up happening is, um, the studio open- So the studio kind of like became more similar to what you see today, you know, where it's like, you know, you have the PIs with the arm bands and stuff like that. Um, and you know, they're all doing like the checklist and stuff. Um, and eventually we got like a couple of classrooms and we actually were, and this is at the point where we were now at, around where like the, um, we were in that like area where the idea lab is, I don't know if you know what that is. It's like a, it's where the ME students take 2110. Um, yeah. So yeah, so because basically what happened is, is that they were like, Hey, we needed Invention Studio for like just ME students only so that they, they, cause that was kind of one of our big things was also that like, we were not going to be like a departmental makerspace. Like, uh, The Hive or, um, the Aero maker space. We basically didn't want to like restrict our, um, focus to just being about like, you know, uh, ME stuff or, you know, a give- or like, you know, give too much priority to like researchers, but, you know, um, and so we ended up basically, um, grow- We were growing and growing and growing. Uh, and eventually, uh, what ends up happening is, uh, we ended up in a bit of a crisis because, uh, we actually had an issue with the, uh, we had a pretty serious issue with, yeah, it was the SCC. Um, and this is important to the history and you want to like the full history, right? Or just like how it came to be.

Jaewon Drake (22:49):

The full history is great.

Matthew Dick (22:51):

Okay. For sure. I mean, um, yeah, so basically, um, you know, so the studio is like kind of growing and growing and growing, right. Um, you know, it's gotten, you know, a heck of a lot bigger. And what happens is that, um, the, eh, we had an agreement with the, uh, student competition, uh, teams basically like, Hey, uh, you know, if you're gonna work on projects in here. Uh, right. Cause the problem was is that they needed after hours access. Cause I think at the time they, uh, uh, they were having issues cause you know, how they I don't know if you know, but they have like a huge like workshop out, uh, by 14th Street. Uh, in Atlanta. Yeah. Yeah. So, um, basically they ended up, um, like basically devel- uh, they ended up basically like using our Makerspace for a while as their like workshop and we were like, Hey, so like that's cool, but you know, you can't work on personal projects in here. Cause the problem is that we wanted to make sure that people had a distinction between, you know, PIs and uh, uh, normal users. Right. And, uh, and if you're wondering like, what in the heck does the story have to do anything? Uh, basically this story is basically like how, um, the studio ended up basically affirming its status as strictly student run. Um, and the reason that's important is because that is how, um, that is the reason why the Invention Studio as it is today is not in any way similar to The Hive or the AMS, uh, because of the fact that many departments looked at what happened, uh, after the incident I'm talking about and said, okay, we're gonna, you know, uh, just make them employees of the department so that, you know, they don't have authority to dictate terms to like researchers and stuff. So like for example, like the AMS, they have to like, like if the, if somebody, if somebody from their research lab needs to print something, then they have the authority to like literally just "yeet" someone off of their uh, printer. Um, right. So what ends up happening is, um, they find, I think it was like the head of a GT motor sports or the president of GT motor sports- Or was it [inaudible]? One of them... Uh, was in the studio after

hours, uh, cutting stuff for his capstone. And, you know, I mean, it, it, like I said, it wasn't that we wanted to, you know, kind of, you know, you know, go all "poo poo" on anyone you know, on SCC members is really just like, we wanted to make sure that PIs have a distinct role, a distinct role and distinct benefits. It's like, alright, you, you know, you've proven that you can, you know, meet the checklist requirements, therefore you can stay in after hours. Right. Well, the SCC, um, has something similar, but they kind of like have essentially like huge, um, like multi hour long workshops that, um, right. Uh, which is why we generally trust their judgment when it comes to, uh, you know, building things. But at the same time, once again, you know, you have to, there's, you know, we have to keep that benefit. Otherwise, you know, it's kind of what's the point of being a PI when, you know, uh, you can just be in the SCC and you get the same level of access. Right. Um, well, what ends up happening is this ends up in a huge debacle. Um, you know, I think, um, yeah, the pre-, yeah the president at the time, the president of the studio, um, it was not Veronica, Veronica was the head of operations. Um, well he actually bans, uh, he bans the president from that president of the club of the SCC team from the studio. Um, yeah. And so this causes like, uh, like a borderline riot to break out. Um, you know, they, they file a complaint to the professor that's in charge of the SCC teams. Uh, he goes to the, um, uh, head of ME, the, um, department head and is kind of just like give access like now. And they're like, okay, yeah, sure. Fine. Sorry. And so they gave, they give them back access. Um, right. And normally that, you know, you know, that would've been the end of it, but what the professor, what the, what the president at the time decided to do a, when he was told that he essentially was being forced to give back access, uh, was to go into sums and ban the entire SCC, like all of the teams, all of them from the studio. Uh, and so, uh, this started a huge thing. I, the president of the, uh, school got involved. Um, and it, and then what the president did was they emailed the PIs. All of the PIs and were like, Hey, if you're caught coming in tomorrow, um, in light of recent events with like, you know, the faculty basically trying to like push them around, uh, you'll be fired. Yeah. They, they threatened to fire every, any PI who happened to come inside. And it was crazy. Um, it, this almost led to the Invention Studio, uh, ceasing to exist. Um, if it weren't for professors like, um, uh, Anjarwalla(?), um, he's like our current faculty advisor, um, the studio would no longer exist. Um, the way that it is now. We would be a, we would just be a fab shop that's run by a paid staff, you know, and which would kind of suck because I, in my opinion, again, cause that would, uh, that would definitely have destroyed the purpose of the Invention Studio in the first place. Right. Um, but anyways, so what ends up happening is that Amit steps up and says, Hey, um, I'd like to speak on behalf of the students. Uh, here's why they're doing the things they're doing. Right? Uh, here's why I think that we shouldn't do that. Right. You know, basically just like saying like, Hey, let's, you know, let's all calm down. Let's not, you know, you know, practically like nuclear strike, the, uh, uh, you know, these, uh, you know, this club. So what happens is, is that he, it basically leads to the Inven-. It basically led to the Invention Studio, um, being given pretty high autonomy, uh, from the ME department. Um, and Amit essentially, uh, became the faculty advisor of the space, uh, which meant that he essentially was uh, he and ever since then he has been, uh, he has pretty much been the one in charge of, um, essentially like what the Invention Studio has been doing from then on out. Uh, he kind of like helps to guide, uh, where things go. Um, yeah. So, um, and then after that, um, we kept on growing and then eventually we got, um, huge donation from the Flowers family. Um, and by the way, a little thing, uh, the, the Invention Studio, it's called the Invention Studio, but technically it's called the Flowers Invention Studio. Um, we have, we call it that because, uh, you know, since the Flowers family is one that, uh, gave us all that money, we're like, well, we're going to name it after them. So, um, so generally when you hear like the Flowers Invention Studio, they're talking about the ME Makerspace. Um, yeah. Uh, so essentially what ends up happening is the, at this point, Invention Studio is now finally, um, at a point where, you know, it's like, you know, it basically, and this is the point where the Invention Studio kind of became the way it is now. We got this massive renovation, had a bunch of architects come through and now, uh, we, and now we're the big giant, uh, Makerspace that we are today. Uh, and

we're still growing actually. Um, apparently we're going to be taking over the entire, cause ME department's moving over to the Instructional Center. So we're going to be moving over to, uh, we're going to be probably taking up multiple floors of the ME building now. So that would be pretty cool when that happens. Yeah, I'm really excited for it.

Jaewon Drake (33:01):

So yeah, I mean the history of the, Invention Studio--there's some turmoil and it's amazing that you guys came back for that.

Matthew Dick (33:10):

Yeah. There, there, there were a lot of twists and turns. There was, um, you know, there was a, there was a pretty crazy kind of like saga, uh, when it comes to just this, uh, studio becoming, um, the way it is now in the present day. Yeah. It's, um, it, it was a wild ride. For sure.

Jaewon Drake (33:34):

So Georgia Tech really kind of set the tone for like Makerpaces. Um, could you tell me about how the Invention Studio community differs from other colleges' Makerspaces?

Matthew Dick (33:48):

Yeah, so one of the biggest, um, one of the biggest things that our studio that the Invention Studio has, uh, in comparison is the fact that we are a volunteer space. Um, and you know, that might not seem like it's a big deal, but the thing is, is that every single- there's this, uh, conference that they hold every year. It's called iSAM. It's the International Student Academic Makerspace Conference. In fact, GT was actually supposed to host it, um, this fall. But, you know, coronavirus so, uh, so that, yeah, so, um, like many things coronavirus canceled it, um, including graduation, but you know, so, uh, so, uh, what ends up happening or what am I saying? Um, the Makerspaces at that, at that conference, uh, constantly ask us, um, how in the world they're like, how in the world do you manage to, you know, get all of these students to, you know, work without pay? Like how in God's name do you get all these students to like, you know, help out and stuff, you know, without paying them? And we're just like, well, we just recruit people that, you know, enjoy building. Like it, it sometimes it kind of boggles us that like, it's such, but the thing is that, you know, we, we, one of our biggest things was that we try to ensure, uh, that we ha- that we try to basically like foster a very strict culture of, you know, you know, you do not, you know, you know, you, you know, do we do not prioritize anyone, um, over fellow students, right? We don't ever say like, Oh, sorry, you know, this professor has a, you know, a thesis proposal to do so you're kind of out of luck, you know, because a lot of students have gotten kind of like, um, you know, kind of, uh, nudged over by those kinds of instances because like, a lot of these Makerspaces will prioritize, um, academic research groups over, you know, the students, which, uh, for a lot of people at the Invention Studio we think is kind of, uh, it's kind of preposterous in a way because, you know, they're, the Inventi- a Makerspace should always be about the students, uh, first and foremost. And so we want to make sure that essentially there's no, um, we want to make sure, make sure that, you know, every student that comes into the Invention Studio, um, will get the same experience regardless of their background, regardless of, you know, who they are. Right? Like they could be a PhD student and we would treat them the id-, you know, identically, uh, cause we want to make sure. Yeah. Cause, um, that's one of the big things about other Makerspaces. Um, even just ones on our campus because as I mentioned, and also that event I was talking about was the Invention Studio strike. Um, that's what we generally call it. Um, in house. Um, the strike led to a lot of GT faculty basically saying, okay, so you know, this

experiment with having students run the Makerspace with autonomy has failed. So let's, you know, take, you know, let's cut our losses and just, you know, replace everyone with uh, like, you know, let's just, we're just going to replace, you know, everyone with, uh, instead of them being volunteers uh, now they're faculty, or not faculty, but like they're staff, they're paid staff, which basically means that it gives the AE department the ability to just like fire them basically to hold a paycheck over their head and possibly even fire them if they don't like, uh, follow certain guidelines set by the schools uh, whim. Right. A lot of other schools do that. Uh, they follow by the policy of like, students do not have the ability, they don't think that students have the ability to, um, uh, have that kind of leadership role. And so a lot of times they will just say, um, kind of just like, nah, you know, you don't like, you know, they're not smart enough to be able to do that. So, uh, that, that's really where the big difference is just like the, just the amount of, uh, uh, just the fact that we, um, are highly, highly focused on, you know, you know, all students at the school rather than a given department. Um, because a lot of them, uh, like I said, uh, are really just focused on one given department's needs or use cases. Uh, whereas, we try to kind of be more generalized so that anyone can come in and build anything that they can think of. So, yeah.

Jaewon Drake (39:20):

Awesome. So could you tell me about the culture of the Invention Studio community?

Matthew Dick (39:26):

Yeah, so, um, we have a really, um, we have a real- I think that we have a, um, really great, a really awesome culture, um, at the space. So the way that it kind of goes, I would basically describe it as, um, we try to, we foster or our main goal is to foster a sense of, um, kind of making, building things cool. Right. Um, one of our, in fact, uh, one of our clubs we have, there's kind of like a internal club inside of the club. It's called, um, we w it's actually called, uh, the follow through club. And the idea is that, uh, anybody who joins it right, um, and comes up with a project idea has to actually follow through on that project idea. And the idea is that we all like encourage each other and like give each other suggestions on how to, uh, follow through on our respective like projects. And so a lot of, uh, a lot of students, um, at the space generally tend to end up being like makers. So we, um, so they ended up like, you know, uh, making instead of, you know, buying something on Amazon for their family. They all like, you know, go to the wood room and actually build, uh, their family a, uh, they'll build their, their, you know, they'll build a, uh, uh, cutting like a cutlery set or not cutlery set, but like a cutting board set, uh, for their, um, family and friends for like the hol- for like, you know, holiday gifts. Right. Um, another example, uh, you know, another common thing is like, they'll um, make like these or, or people make like really cool projects for, um, you know, like they'll say like, Oh, I have this like class project where I have to like, design a control system. So like, instead of, you know, let's say like, you know, having a pen balance on top of like a ball or something like that, right. Or like a, uh, instead of doing something simplistic, they're like, Oh, I want to like, you know, make our quad copter that, you know, shows that, you know, uses controls to keep, uh, uses control algorithms like, you know, to keep it stable. So a lot. And so, um, the culture is really just like about like, um, it's about making, um, first and foremost, but at the same time, it's also about, uh, that anyone can make, um, you know, they don't have to be like a STEM major. They don't have to be, you know, a mechanical, they don't have to be, um, like their major doesn't have to end with an E essentially. Right. Uh, that essentially, you know, as long as you're willing to learn, anyone can do. It's kind of like, um, I don't know if you've seen Ratatouille, but like that chef, I think Gusteau. He's like, "anyone can cook", right. It's, it's the, it's the same mindset that we have at that's the same sort of mindset that we have at the Invention Studio: Anyone can, yeah.

Jaewon Drake (42:59):

So it's really kind of open-ended. The projects and the community.

Matthew Dick (43:05):

Yeah. Uh, there's no like, um, there's not like a typical kind of project that somebody makes or anything like that. It's generally a pretty, uh, diverse. You know, it's a very diverse set of, uh, uh, projects that people generally come up with to do.

Jaewon Drake (43:28):

I see. Uh, could you tell me about what the most interesting project you've seen so far is?

Matthew Dick (43:36):

Uh, yeah, sure. Uh, so the most interesting project I've seen, um, to me was the, um, there was a, uh, uh, cause I am an aerospace, uh, student, um, uh, for, uh, just to kind of clarify. So a lot of my interests lie in that field. So I was particularly intrigued by, I saw this, um, there was this student, um, it was a picture from a really long time ago. Um, they created a, umm, it was a whole, um, it was like a, it was a quad copter, but it wasn't just any, you know, it wasn't like, you know, Casey Neistat helicopter kind of thing. It was a quad copter that instead of using like four motors on, you know, you know, one on each arm, you know, the kind of classic thing you generally see, um, or you know, if you don't know, uh, yeah, that's like the, that's like the general, um, design of a, uh, most quad copters that you see. Well these, uh, this guy built it with one motor in the center and, um, servos, four servos in the center with the batteries and stuff and the servos controlled, um, tiny gearboxes.

Jaewon Drake (45:36):

Interesting.

Matthew Dick (45:37):

Yeah. And the gearboxes controlled the rate of rotation of the propellers on each corner. So he used one motor to drive a quad rotor. And so I thought that was fascinating. Yeah. Um, that, that in my opinion was probably the coolest project I've seen personally.

Jaewon Drake (46:00):

That's awesome. And it worked?

Matthew Dick (46:04):

I don't know. I, it was, it was a picture. Uh, so if it did, that'd be amazing. That'd be incredible. Uh, but do I know for sure if it, like, if it took off? No, I don't.

Jaewon Drake (46:19):

I see. That's awesome. So I guess that's like, you know, it's in the name "invention", so like people invent stuff that you don't know if it'll work or not. And they test it...

Matthew Dick (46:27):

Yeah, I mean, yeah. Yeah. We're, we're called, um, the reason why we're called PIs is cause we're called PI instructors or prototype- what am I saying? Prototype instructors! Ah yes, we're called PI instructors, but, uh, prototype instructors. And the reason for that is because, um, one of our big, um, mantras is

that we are not there to build the thing. Right. We are there to help you when, um, you build a thing or when you want to try an idea to build a thing. Right. And we like are like, Oh, okay, that might work. Or, you know, that might not work. Right. And, you know, that's kind of like our, you know, modus operandi is really just like, you know, that we're all about basically just, um, we're, we're about, you know, helping people to like figure out what's right. Right. Not to know exactly what's correct or to, you know, uh, like, you know, basically like, have, like, the exact perfect answer is that we will be able to help when you are figuring out what to do.

Jaewon Drake (47:54):

Right. So you're like basically more experienced members of the, of the studio and your job is to like guide members, other people?

Matthew Dick (48:05):

Yeah. We're, we're, our job is to like, guide users, like, Hey, so if you're like, for example, you know, like if they're like trying, they're like, Oh, I need to make a box for my, uh, capstone project. And we're like, Hey, um, that's great. Right? You know, uh, you should probably actually do this instead of this. Right? So that's basically what we do. We basically just go like, Hey, so, um, you know, like, Oh, your idea is great. Like, love it, you know, but, you know, it's not, you know, it's not perfect. And here's why. Basically.

Jaewon Drake (48:44):

I see. So moving on to your personal experiences in the Invention Studio, what is your go-to tool and the Invention Studio and why?

Matthew Dick (48:56):

So, um, you know, it's funny as it is, uh, it's, um, this is actually a very common question. This is actually one of the questions for the PI interview. Um, little fun fact. That question you just asked me is the exact question, uh, that we, one of the questions that we ask, uh, when we are interview- interviewing people is, uh, what's your favorite tool and why, um, and when they get inducted, uh, at the first general meeting, we always ask them the same thing. Like what's your favorite, you know, what's your favorite tool and why? Um, and so I would say that my favorite tool personally, um, is probably [inaudible]. I mean, I know it's kind of a sell out move cause I'm the 3D print master, but it's gotta be the 3D printers. Um, more specifically the, um, the Ultimaker 3, uh, cause it's just like so reliable. Uh, it's such a reliable platform. Um, it, is, it could be just as precise as like a resin printing, uh, a resin printing machine. And at the same time, you know, it doesn't cost, you know, it doesn't break the bank to get one, which is why like, uh, now I actually have my own Ultimaker, um, in my own house. Uh, in fact, uh, right behind me is my Ultimaker 2+. Just sitting there just chugging along on a couple of prints that I've been doing.

Jaewon Drake (50:31):

So what kind of things do you use the 3D printer for?

Matthew Dick (50:36):

Um, a lot of it's really uh, modeling, uh, like uh, model airplane stuff. So I do a lot of like model airplane projects. Umm. Umm. Or like, just like very small personal projects like designing my own 3D printed bottle opener and stuff like that.

Jaewon Drake (50:59):

Um, let's see. How has uh, maker culture evolved on the Georgia tech campus?

Matthew Dick (51:08):

Um, so, and that's what I answers. Um, the problem is, is that I haven't, I wasn't around in the beginning, so I don't really have a way to answer that directly because I don't have, um, kind of, uh, the ability to like kind of show, kind of like talk about that time, uh, just because like [inaudible]

Jaewon Drake (51:39):

Have you seen sort of a growth in the Makerspace since you've been here?

Matthew Dick (51:45):

Oh, yes. Um, it's then at a consistent high level of growth, um, for a very long time. Um. And it's still growing rapidly, um, and Makerspace- And the, um, The Hive as well has been doing a lot, a big part in like, um, improving the maker culture surrounding like electronics type stuff. And so a lot more people are doing things like, you know, um, you know, like building their own projects and, uh, all that stuff. Like it's, it's definitely gotten a lot bigger.

Jaewon Drake (52:31):

That's awesome. So how, um, with the current situation with COVID and everything, how has it impacted operations at the Invention Studio and its future?

Matthew Dick (52:43):

So, um, right now actually, um, at, you know, at the current time, um, the Invention Studio has actually been doing a lot to combat coronavirus. Um, so a lot of what's been happening is, uh, the Invention Studio is actually basically been, uh, we basically put our grad students to work to design, uh, additively manufactured, um, face shields and stuff. And so we actually, um, they actually put out a, um, like a fully fledged design, uh, just recently actually. Um, and I think it's supposed to. Yeah. And I think it's, and I think it's already being put into production. Um, so like 3M and it's, um, they're like doing like face shields, face masks, all that kind of stuff. And basically they, they basically closed down the Invention Studio fairly early on. Um, and Mmm. So operations in terms of like, you know, other users using it have, uh, completely ceased. Um, but there's been a lot of work, um, beyond that with, um, uh, grad students and stuff, uh, trying to, you know, help out in the effort as best they can. Um, by, you know, just working on, uh, those face shields and stuff. So it's basically just like right now, there's basically just a skeleton crew in there with, uh, a lot of, uh, um, uh, basically just constantly working on, uh, developing, uh, and manufacturing, uh, face shields, uh, to help out doctors, uh, at like Emory. Uh, you know, I think the Children's Healthcare, um, group, I don't know exactly what like their precise name is. Um, but yeah, they've just been working a lot on, uh, just like making like face shields and stuff.

Jaewon Drake (55:10):

That's awesome that they can use those resources to help the crisis.

Matthew Dick (55:15):

Yeah, no, I think it's, um, I think it's really good that we're putting our materials to work like that. It's, um, I hope that, uh, it's able to save lives. Um, yeah, I, I think it's, um, I think it was the right thing to do.

Um, I wish that more Makerspaces were taking part in that. Um, in fact, like, I think, um, like if I had the ability to, I would've, uh, I would've definitely told, I would have definitely had like the AMS, um, shut down operations, um, and just start working on face shields and stuff like that as well. Um, they unfortunately, uh, do not do, they did not do that and they actually have been just like, I think they're still open. They're just open only to researchers. Yeah.

Jaewon Drake (56:13):

So the Invention Studio is really like the one taking charge in this?

Matthew Dick (56:17):

Yes.

Jaewon Drake (56:18):

Okay, cool. Are there any further experiences that you'd like to share?

Matthew Dick (56:26):

Uh, not really. I mean, there's like, I mean I've had, you know, just like myself, really fun, really good personal experiences. Um, you know, and you know, the community as a whole has been very good to me. I've always, I've had, I've made a lot of great friends there, friends who I think will end up being, you know, lifelong. Um, you know, I just, uh, uh, yeah, I have, uh, I've really gotten to know the people there and, uh, you know, uh, they definitely have like grown on me and, uh, and so, yeah, I just like, yeah, the Invention Studio is basically, it's been like a huge part of my life, so, um, I always enjoy like talking about it and stuff.

Jaewon Drake (57:17):

Nice. Awesome. Well, thank you for participating in this research project.

Matthew Dick (57:21):

Yeah, no problem. Uh, yeah, hopefully I, uh, answered all your questions I tend to. I know I tend to kind of ramble, um, partially because I actually really need to get some, uh, I need to get some food, but, um, but, uh, other than that, yeah, I've just been, uh, I enjoyed this, so thank you.