Intro 00:00:01

Inventors and their inventions. Welcome to Radio Cade—a podcast from the Cade Museum for Creativity and Invention in Gainesville, Florida. The museum is named after James Robert Cade, who invented Gatorade in 1965. My name is Richard Miles. We'll introduce you to inventors and the things that motivate them. We'll learn about their personal stories, how their inventions work and how their ideas get from the laboratory to the marketplace. What good is a computer or a smartphone if you can't touch it? That may sound like a fantastic dream for some of us, but for about 5 million people in the United States, that's a serious problem. Welcome to another episode of Radio Cade. I'm your host Richard Miles, and today my guests are Mohit Patil, the CEO of Abilitare, and Parth Shah, co-founder of Abilitare, a company that provides hand free access to computers and smartphones for people who don't have it. Welcome to show Mohit and Patil—and Parth, sorry.

Parth Shah 00:01:06

We're really happy to be here. Thank you for doing this.

Richard Miles 00:01:09

So, I'll sort of let you alternate in terms of the question, but let's start out with kind of a solid description of what the invention is and what it does. I'll start by taking a stab at describing it, and then you all can correct me and fix my errors, I'm sure. And understanding what it does. So, apparently there are a lot of people with hand disabilities, many more than I thought, about 5 million, and that makes it either impossible or very difficult for them to use a computer mouse or touch on a touchscreen. And so, what you've developed, if I understand it, is a head wearable sensor that allows them to use their head motions, to do the sort of things that we would use a mouse for or be able to touch a screen on a smartphone. Did I get that right? Is that an accurate description of what it is?

Parth Shah 00:01:52

You are absolutely right. So, in short, it's a head control mouse instead of hand controller mouse. So, instead of using your hand on the table to move the mouse around, you just use your head up and down, left and right. And the cursor on the screen would move up and down, left and right. Basically.

Richard Miles 00:02:08

So, the universe of people that this would be useful for, are not just so say, that are either amputees or for some reason, can't use their hands. And it's also for people that have conditions, right? That like, carpal tunnel or flinder that just makes it painful or very difficult, right?

Parth Shah 00:02:24

Yeah. Oh, variety of conditions from carpal tunnel, as mentioned, and repetitive stress injuries in their wrists and nighters, to spinal cord injury, to stroke, to paralysis, ALS, muscular dystrophy. It’s a long, long list.

Richard Miles 00:02:39

Walk me through some of the actual products that you have now, either on the market right now, or about to come on the market. You have three distinct things that somebody can buy or a company or an individual can buy or purchase.

Parth Shah 00:02:51

You're right. So, the first is the head mouse that we already discussed. It's a head variable sensor that someone can attach to their cap or their headphone and start controlling the mouse cursor. The second is an adaptive switch, which if someone can use their feet or elbows to click, it's a big button for them to be able to click. And the third is a software product, many of our users have no control of their limbs, no control of their muscles from the neck or below. So, they can't really use an adaptive switch that I mentioned. So, for them it's a software product that lets them click, just using the UI controls.

Richard Miles 00:03:30

Interesting. Give me an indication, what is on the market now, like let's say you have a quadriplegic, what do they do now to solve that problem?

Mohit Patil 00:03:38

So there exists an array of options for the people depending on their condition. And there have been changes more or less *[inaudible]* for the past 20 years. So, the most basic grand widespread method, actually would not believe, is mouth stylus. So, it's more or less like handheld stylus, but you hold it in your mouth, and you peck on the test screen or on the keyboard. A lot of people are super fast with that. Kudos to them, but that's not efficient. It starts causing neck pain. Your eyes start hurting, a whole area of issues and we can provide a better option. Conceptually, there is eye-tracking for people who cannot move even their head. For those options, *[inaudible]* and eye-tracking is one of the methods, voice dictation, and voice-controlled computer interaction is another option. However, the technology has been stagnant in that sister space for the past couple of decades. And people haven't really leveraged the advances in core technology. For example, we are using IMU instead of any external tracking hardware, which became quite efficient in the last decade or so. So now is the time we are seeing new options or new technologies being used to solve the same issues that have existed, that are competitive options, but you improve more efficiently is what we are offering in that system.

Richard Miles 00:05:03

You mentioned on your literature, there are 5 million people in the United States. Do you have any numbers or any data on what that looks like worldwide?

Parth Shah 00:05:11

The trend remains the same. So, 7 billion people, you just multiply that number proportionally. So, I think that's more like a 100 million people worldwide.

Richard Miles 00:05:21

If you divide it up into two categories between those who have very severe physical disabilities, other paralysis, stroke, spinal cord injuries, and then the second group of people who like tendonitis, arthritis, and so on, that second group probably much, much bigger, right? Cause I think almost everyone at a certain point at the end of the day, their thumb is sore or their fingers sore from clicking on a mouse or

tapping on a screen. Do you think that, that second market, how many people just say, hey, this is actually just much more comfortable once I learn how to do it in my head, or is it really meant for people who have either severe pain or severe physical constraints?

Parth Shah 00:05:57

We want to help those with severe pain first, definitely. So, if you get to a point that I just don't use the mouse at all, then that's what we want to go for first. But you're right. This is for everyone who thinks they need to protect their wrist muscles. It's getting worse and worse over the weeks. Then you better, late than never is what they say, right? So better move on to a more ergonomic solution now, before it gets even worse, therefore it gets to a point that you have to use the head mouse.

Mohit Patil 00:06:29

I think the size, where it's kind of untapped or undiscovered problem, because many people are not aware of the implications of carpal tunnel so a lot of our customers, for example, hadn't revealed their condition to their employer in the fears of losing their employment. A lot of people will just continue trying out solutions without investigating that properly because carpal tunnel has a serious issue to be addressed and treated is not that popular of an idea. So, there is a huge population who could be benefiting from this, but they are not even aware of their own condition.

Richard Miles 00:07:08

Let's talk about how you all came up with this idea. I'm assuming that both of you have a, probably a fairly strong computer science background, and I know Mohit you had done some work on brain computer interfaces for neurological disorders. And then I also know you were at one-point roommates. So how did this arise? You're just sitting up late one night and go, hey, wouldn't it be great if there was a head wearable mouse, give me a little a sense of how you all came up with the idea.

Parth Shah 00:07:33

Funny story, actually. So, we both have a research background in electronics and computer science. Mine was an AI *[inaudible]*. And during our graduate studies, we came across this problem statement, especially for brain computer interfaces. A lot of the beta users, trial users, are disabled. Okay. And that's how we first came across the problem. And, this one particular Ted Talk really inspired us. The speaker, Jeff Paradee, he has muscular dystrophy and it got progressively worse. So earlier as a kid, he used to paint, he used to go fishing with his dad, he used to go play a lot of sports and very active and slowly as the disease progressed, he slowly lost the ability to do any of that. He couldn't play sports. He saw others doing things that he used to do and how that made him feel.

Parth Shah 00:08:29

That really inspired us. He really hammered down the need for assistive technology, the need for a technology that will let people get back to society. And we, as engineers are like, hey, you know what I do, we can build something to help this. And that's how we got started. That's how we got started building the technology. We participated in the big idea competition to put our technology out there. We got a lot of support from there and going on six months later, we get this email from Jeff saying that, hey, I found your product online. It's really cool. Can I be our beta user? So, he was really happy to know he was the inspiration, but yeah.

Richard Miles 00:09:08

That, well, that's a great story. So, he didn't know that he was the inspiration when he called you?

Parth Shah 00:09:12

Exactly exactly. Now.

Richard Miles 00:09:14

Well, we'll be sure to put that in the show notes, a link to that video, it makes me wonder how many Ted Talks have inspired inventions. Probably the whole sub-genre of people like you guys, listen and go, hey, well, that's actually a kind of a cool, interesting problem. And then you have the tools, intellectually, to figure out possible solutions. So, yeah, I love that story.

Mohit Patil 00:09:32

And a quick note. So, our name, Abilitare, in Italian actually means to enable. So, it perfectly resonates what our mission is. Yes. And you realize that just allowing access to computers can give so much communication, independence, digital independence to the disabled community, that it can have a huge impact on the quality of life they have. So, this is the first problem that we are solving, but it reflects a larger mission to enable humans to be more.

Richard Miles 00:10:02

What was the second thing you did after you saw the Ted video? Did you the very next day, you get out of sketchpad or go into the lab and try to start working on it, or did you do some more thinking about how exactly would we solve this problem?

Mohit Patil 00:10:14

We actually went over a lot of stuff. Of course, we are engineers. So, the solution comes to mind first and you're excited to go after it, even if you don't know if it's the right thing to do. So, we initially, like initial days, were much more on playing out with stuff and exploring work, but then we took kind of a more planned approach, spoke to a lot of people, understood what they were expecting, presented a couple of ideas, just took reviews on what their thoughts were, and you cannot *[inaudible]*.

Richard Miles 00:10:46

There are a lot of TV shows and articles and books about startup culture. Typically, it's a couple of guys like you or a small team who may hit on an idea. They start a company, and the movies and the books it's portrayed as like a lot of fun, maybe a little bit of risk. And so on, a lot of upside, everyone becomes rich or the other end people go to jail, right? Like Elizabeth Holmes. But tell me a little bit about your experience. And I know you've just sort of started the company formation and early steps, but what has it been like so far apart from the technological part of developing technology, the actual thinking like, wow, could this be a product? How do we get it to market? What has that been like for you?

Parth Shah 00:11:25

Unlike the TV shows and Hollywood, it's not as glamorous as it is shown on TV, right? The main feature of the startup experiences, uncertainty, uncertainty, that what they're doing is the right thing.

Uncertainty, whether you get a paycheck, the next one, uncertainty, whether this will even work, whether people want this uncertainty, that the product will be successful technologically. So, that's what I think it's important for people to understand before the thing about jumping into this experience, if we are ready to face that uncertainty, that makes things a whole lot easier than handling.

Richard Miles 00:12:04

It's a great answer. What sort of got you through that period of uncertainty before you'd had your first prototype or success? I'm sure, probably people, maybe friends and family looked at you and said, what exactly are you guys doing here? What gets you through that period before you have your first success?

Mohit Patil 00:12:20

For us? It was first of all, Parth and I used to still live as roommates. So, we always had time to discuss our goal, anything at any point. So that was quite a huge benefit.

Parth Shah 00:12:33

Yeah, it definitely is of huge benefit to have someone you can run to someone you can depend on that, hey, if you're feeling down, he can pick you up or you have to pick them up if they're feeling down.

Mohit Patil 00:12:45

And of course, Gainesville has been a pretty amazing support system. So, we always had other founders talking to us about how they went through the same stuff, and also mentors, everyone from *[inaudible]* of course Cade Museum, *[inaudible]*. And we thought there is a lot of support out there for the first-time founders, uh, we can call. And I think that also plays a *[inaudible]*.

Parth Shah 00:13:09

Yes. At least in the U.S. ecosystem.

Richard Miles 00:13:12

Yeah. That's great. And there's a lot more now than there used to be certainly in Gainesville. And it's not like Silicon Valley where someone just comes and gives you a big check. Both of you are immigrants, in your case from India, which I think is fascinating. My mother was an immigrant from Mexico and a lot of the inventors that we interview are the first generation or second-generation immigrants. But tell me a little bit about what you were like as kids. What were you interested in and then what were some of your early influences say in grade school and high school?

Mohit Patil 00:13:42

Yeah, so I'm from Kolhapur, which is a small city, short trip from where Parth is from. And I grew up in my high school in the same town. It was nice experience. My family is from a medical background. So, I saw a lot of social work being done. And after that, I went to college *[inaudible]* for engineering. Of course, as you can see, so I was definitely into breaking and making stuff. So that kind of reflected me going more towards technology, but other than bio or arts, I think it was definitely a right fit. And then it was a lot of bouncing around. So, I went from mechanical engineering and electrical engineering, to physics, trying all different stuff, and seeing, okay, what kept my interest more than several months. And I think it got me in the right spot at that time.

Parth Shah 00:14:31

Yeah. Thanks Mohit for that. So, my story basically is, as a kid, I was always the one who was building stuff with the Lego blocks instead of the one who is breaking them. You know, that that was my brother. Growing up as really fascinated by mechanics, games, or Lego blocks, building stuff. And that's how I became a builder of technology products, et cetera. And also, what inspired me was my grandpa. So, a little bit of history lesson for those out there, there was a freedom struggle in India against the British occupancy. And there was a non-violent movement against our British led by Gandhi. And my grandpa was a part of it. He was a non-violent freedom fighter, and he got shot multiple times. He got unconscious or beaten by the police, but he never picked up a gun. And his experience, his strength inspired me to do something on my own growing up. So that has been my story. I did my engineering, came here for education, and here I am.

Richard Miles 00:15:32

Those are both great stories and kind of leads to my next question too. I was going to ask, often these sort of skills and talents run in families. Are any of your parents or grandparents, were they engineers, scientists, physicians, or even wider, uncles, aunts, brothers, sisters? Tell me a little bit about your families and their backgrounds.

Mohit Patil 00:15:50

My family. Yes. My uncles and cousins are from the engineering background, but in my immediate family, both my parents and both younger sisters, everyone is a doctor. So, there wasn't much technically I would say inclination, but what I have seen is that kind of entrepreneur themselves. So, each of them have tried out joining the medical system, but then they started something of their own medical practices, involvement in other organizations, founding social organizations. So, I think that somehow subconsciously has inspired me towards this.

Parth Shah 00:16:26

So, for me, my dad is an engineer. My grandpa has always been in the social and political work. So, growing up, I did have a lot of opportunity to play around building stuff. I used to take electrical components from the toys that my brother broke and try to put them together and, you know, build something, that used to be fun.

Richard Miles 00:16:48

Uh, Mohit I was going to comment, the rest of your family, all being in medicine. What we've found at least in talking to a lot of different inventors is a huge amount of invention or creative thinking takes place in two fields we've noticed, or at least two fields, but in medicine, in an agriculture, my theory is that one of the reasons is doctors and nurses and farmers are all early adopters of technology because they have to make it work. Right? A lot is on the line, whether it's a sick patient or a crop that could fail or things like that. So, if someone with an engineering background comes in and says, hey, we've got this thing and it does that. They'll go like, great, sign me up. Let's try it out. So, I think it's kind of neat that at least with this, there is a medical application or medical device application, particularly for those people who absolutely cannot use physically, a mouse or what a difference that makes.

Mohit Patil 00:17:34

And you're absolutely right. You've got that point very accurately. Like even in here, when we're talking to the *[inaudible]* specialists, occupational therapists to discover what their patient needs are, they're quite receptive. They're super helpful in giving us their opinion. They are the ones who have interacted with our basically customers for the past decade or so for the professional life. So, they are super enthusiastic about kind of changing things for better. Definitely.

Richard Miles 00:18:01

I heard a great story years ago, I think from the president of Arizona State University. And he was commenting that they used to run these business plan competitions there, and they were always sort of disappointed because they're supposed to come up with that idea and then develop it and market it, and so on. He said, the quality of the ideas were always pretty thin or kind of lame. So, they decided, well, we need to start pairing these business students with nursing college and engineering students. And then all of a sudden, the business plan competition took off because it was the engineers and the nurses and doctors that had the actual ideas. And once they married up with or connected with business people, then the quality of the entire competition improved. But he said, typically business students would come up with the idea for a t-shirt shop and they go like, no, he didn't elevate it.

Richard Miles 00:18:45

So, I thought that was fascinating. The contribution that problem-solvers, I guess, and engineers of course problem solvers. So, one more question for the two of you, again, you're relatively early doing this only a few years, but I'm sure you've accumulated some experience. You've had some good days, some bad days, days where things seem to work and when they don't, and you've probably accumulated a little bit of wisdom in terms of what you might not do again and what you might tell somebody, you definitely have to do this. So are there two or three nuggets of wisdom that if some engineering colleagues came to you and they said, oh, we want to do what you guys did. What are some of the things that you tell them to do or to not to do?

Parth Shah 00:19:23

The first thing we would ask them not to do, especially engineers, is don't get too excited about the solution. Don't come up with a solution looking for a problem, that almost always never works out because we engineers, we will look at the technology and we go, ooh, that would be awesome, let's build it, start around that. But, that never, almost never works out. What you need is a problem. A problem that the society has, a problem that people are desperate to get solved and then use your engineering mind to think, oh, how can I solve that problem? That's a much more promising way to start a startup.

Mohit Patil 00:19:59

Definitely go out and talk to as many people from different backgrounds as possible. We, especially coming from engineering background, we're not exposed to a lot of business side of things or operational side of things. And I think especially as a founder, you need to be exposed to all these aspects of a company and you need to be thinking about them. And if you haven't done it before, of course you can't expect to know. And there is only so much you can learn from programs and stuff. So, it's very important that you go out and talk to people, of course, users, customers, for sure, but go out

and talk to other founders. Especially what we found is if you ask people, they are more than willing to help. So definitely do that a lot.

Richard Miles 00:20:41

Well, both of you are quick learners. There's a lot of good wisdom in just a couple of years. Parth, something you said reminded me of, I was talking to somebody in the venture capital space, actually Randy Scott, who's in Gainesville and their firm invest in a lot of healthcare stuff. And anyway, he told me something very interesting. I asked him, what is the number one problem you find with inventors as they're trying to get started? And he says, well, the problem is they fall in love with their own idea. And I think it's a very similar point, right? It, I love the way you put it. Think about the problem, not the solution because the solution might be off. The problem remains your solution might not quite get it. So, if it doesn't work, you just keep coming back to a better solution. Exactly. I liked the way you put that, cause that I think would help a lot of people who do fall in love with your idea, and they do not want to let it go.

Mohit Patil 00:21:25

And of course, all our products are available online, on our website...

Richard Miles 00:21:29

Abilitare.com. Right?

Mohit Patil 00:21:31

Abilitare.com. People can just go visit place an order. We have some very affordable pricing methods as well, but more importantly, we are partnering with a lot of centers for independent living rehab centers, university disability resource centers, and an important part for any disability startup is having this community partners.

Richard Miles 00:21:51

Absolutely.

Mohit Patil 00:21:51

Make sure that your solution is actually accessible to people who need it. So, we are definitely always open and on the lookout for community partners, we are working now with a lot of charitable foundations, especially if we're looking to enabling independence, et cetera. So, if anybody out there hears this and thinks our product could benefit anyone, innovate, we're always looking out for collaborations.

Richard Miles 00:22:16

So hopefully this podcast will have the same impact that the Ted Talk by Jeff Paradee did. Someone's going to listen to this. That is a fantastic idea, but absolutely we'll put that in the show notes so people can get to your website and certainly contact you if they're interested. Parth, Mohit, thank you very much for joining me. It's been a great conversation and best of luck. Congratulations. I know you've already had some successes already, won some competitions, and you guys are certainly on the right track and hopefully after your IPO, we'll have you back on the show.

Parth Shah 00:22:42

Thank you very much. We had a wonderful time here. Thank you very much for your support here.

Richard Miles 00:22:48

Great.

Outro 00:22:49

Radio Cade is produced by the Cade Museum for Creativity and Invention, located in Gainesville, Florida. Richard Miles is the podcast host and Ellie Thom coordinates inventor interviews. Podcasts are recorded at Heartwood Soundstage and edited and mixed by Bob McPeek. The Radio Cade theme song was produced and performed by Tracy Collins and features violinist Jacob Lawson.