TEL US POD Daniel Hajas

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SPEAKERS

Siri, Daniel Hajas, Dan Axson

S **Siri** 00:07

Welcome to tell us a podcast all about the world of technology enhance learning, brought to you by the team at the University of Sussex with your host, Dan axson.

D **Dan Axson** 00:18

That's right. I'm Dan axson. And this is the TELUS podcast. Coming up on today's show. I speak to Daniel hi ash. Daniel is a PhD student at the University of Sussex, and who's been here studying physics for his undergrad. And He then moved into engineering informatics where he's working in the human computer interaction lab, and he is working on tangible interfaces, really fascinating stuff, and we talked about that a bit later on as well. He's also managed to start a company as well, looking at how we can support people who are blind to be able to interpret news charts and data and graphs which are usually quite hard or in a accessible even for people who are blind. And Daniel himself went blind when he was about 17. And, of course, that's a really challenging time to do so from an education point of view. So this is why we caught up with him that show and we talked about his experience of that at the time is impetuous education, and the tools and strategies is you sense and it gives some fantastic advice towards the end as well. So listen out for that. And I should note that the audio quality in this recording is, is quite poor. I completely underestimated the noise of the room and the dripping pipe behind us. But if you can make it past that, I think you'll enjoy what Daniel has to say. So without further ado, I'll pass you on to Daniel. I'll be back at the end with shortcut at the show. And

of course, more info on what's coming up next. Enjoy.

D Daniel Hajas 01:59

Alright, well thanks for the Invite. And yes, Hello, everybody. I'm Daniel via a PhD student at the University of Sussex. And I'm in the informatics department. And my research mainly involves something called multi sensory human computer interaction. So in a nutshell, basically how us as humans interact with all kinds of technology, and the mainly interested in tactile interfaces. So how we utilize our sense of touch to interact with technology. So think about, you know, simple examples, like vibrations in your phone. Yeah. And yeah, we're here in Sussex for more than five years now. I had my undergraduate in physics have to have to some research. Excellent.

D Dan Axson 02:43

Thank you for that. And we saw the first time you've been on our podcast, is it? You know, tell us bit about why we when we first met.

D Daniel Hajas 02:50

Exactly. So there was this even maybe half a year ago? Can I get this? Correct? I think it was the digital discovery week. And the we gave a small presentation about some accessibility projects. And we did a short session on different access and educational technologies back then, if I remember correctly.

D Dan Axson 03:11

Yeah. So you talked about Garfield, and yes, company that you founded with your colleagues?

D Daniel Hajas 03:15

Yeah, that's right. So when I was in the second year of my undergraduates and a few other guys, from physics, we got together we tried to solve. And it's a strong word, but improve the accessibility of Science and Technology Education. So we started the startup and still working on it.

D Dan Axson 03:34

It's really great. And we're going to come back to Garfield. So hopefully, we'll we'll look back really nicely. And I'll put some details in the show notes about all this as well, of course. Because Yeah, there's there's very specific challenges you're trying to solve. And absolutely, I don't think it's too strong a word. Because certainly I wasn't aware of the specific challenges until, until reading about what the work you've been doing,

D Daniel Hajas 03:58

and so on. And we spoke

D Dan Axson 04:01

before recording is, we've done a few podcasts now on the theme of digital accessibility. So the reason we want to talk to you at today's because, you know, you use accessibility software and hardware, because at the age of 17, am I right?

D Daniel Hajas 04:18

Yeah, that's right. Roughly 1617. A few months of transition.

D Dan Axson 04:22

Yeah. You lost your sight. So this was just before coming to university. Exactly. And this was in while you were in Croatia. Yeah. Yeah. So if you can you tell us a bit about that moment. And then sort of the because you were in education. So this is what I'm really interested in this that kind of support in terms of technology, particularly, but generally around your education and time and how you could continue to use the resources.

D Daniel Hajas 04:45

Yeah, let's try it was very challenging and interesting times, because I was in sort of halfway through my high school, and you know, that time you already start thinking about what's next, what's your interest, if you want to go to university and apply. And at that time, I was already very much interested in physics and mathematics, me. And, but also, as you said, I lost my sight, which made a big difficulty in choosing what I want to do, because as soon as I lost my sight, I couldn't really use my notebooks anymore, take notes, or do any sort of mathematical things. It was only because, you know, I sat down

with my teachers, they would take the notes, read to me saying that my dad, at the time wasn't really aware of any even general purpose, assistive technology, let alone more specialized, scientific subjects. So it was very difficult and not as it's, it was clearly a big, big, big challenge. And I realized that lots of people and do transcriptions and all sorts. I was like, Well, how will I do this at university? Right? You just meant to go to lectures and do everything? Yeah. So it was a trade off. And I just wanted to do something, which still interesting, but not my passion. Like, I don't know, economics, or history, because it's more tech space is Could it be easier to do? Or you actually want to do the more challenging thing, which is actually your passion? So it was a bit of a developed time. And then I just decided, I'll see how it goes. I'll just do physics. If it works, it works. If it doesn't, it doesn't

D Dan Axson 06:19

make sense. And I mean, for the, for the listeners rather than later. So and for the listeners, you know, you've not just done your degree. I mean, you've you've succeeded quite highly. You've had awards left, right. And center, you finished first class honors, you've done very well, a good degree. So you clearly driven as an academic in your own right.

D Daniel Hajas 06:41

Yeah, I was super lucky with that. Still don't believe. I think it was really the payoff, I actually chose to do my passion, which, you know, in the most difficult times helped me to get through it. Okay. I mean, a huge part of all that was really the contributions from from pretty much old people in the department. freshers students, even under me under my sort of class. Yeah. Or even up to them sort of Head of School head of department level. Yeah. Everybody just helping in every possible way. Okay. So that was a big, big support. And, yeah, I think it's really it's a combination of these two, which, which Anya,

D Dan Axson 07:23

this is really great to hear that the support you've got. And you said, when you as you know, this initially happened is very challenging. You had you know, your family and your friends and your teachers helping you and reading and transcribing for you did when you went to university that that continued, you still have that mechanism odd, then turn towards technology that we signed, posted anywhere in

D Daniel Hajas 07:47

the sun, the first few weeks, it was still kind of that system, it just family and friends. So

what it would be really like, it's just people would take notes from your hydro paper in some format, which might have been a sex before me. They will read it to me that some questions too, so I will try to absorb it in my head or speak after that they would write it down. Yeah, I mean, dude. But of course, this wasn't really a sustainable system. Sure. So I started to already before coming to Universal look into different solutions. And I found mainly one, which converts really nicely, but it has a really steep learning curve. And maybe some people heard the latest early type setting system. And there was a open source project developed by also blind mathematics students, yeah, and you know, sports. And they came up with a system, how we can render this sort of programming language markup language, like writing into more verbal description using screen readers. So I had to learn today's how to use this open source software, and also how to read and write later on in the next in the first few weeks of university, which normally they suggest you to start the second turn your practice.

D Dan Axson 09:04

Wow. So you're having to learn the software, because it enabled you to do the work that you needed to do. And you're

D Daniel Hajas 09:10

exactly

D Dan Axson 09:10

the software itself would normally be addressed until the second year. Yeah.

D Daniel Hajas 09:15

You know, normally, when you start University, it's fine to write even scientific reports and just Microsoft Word, use Excel. And then as you progress, and as things get more complicated in scientific notation, yeah. Usually academics, some teachers, such as this start using later because that's what everybody's using it after graduation, in this field, but I sort of had to do is from day one, because it enabled me to write my own assignments using this language and really, using the computer. But also my support America took notes in this one, which I couldn't read it.

D Dan Axson 09:50

So were you already using screen readers at the time then? And then all you learning to use those at the same time as well?

D Daniel Hajas 09:55

Yes. Because I needed to use for everything else, my emails, or just even to high school assignments and other subjects, or general do pretty much anything. And I had to use a screen reader. So I had a few, like, a year and a half experience with maybe, okay, that wasn't really helpful, but a strange on the into like, a next level up of the screen reader. Yes.

D Dan Axson 10:19

Okay. And so, I mean, just to skip out of it, you know, so fast forward five years, you know, what tools are you using now, you know, in your daily work and daily life that enable you to access the resources to be able to do your research.

D Daniel Hajas 10:34

I'm still using screen readers to high extent. Now, at the beginning, I only use the Windows based screen readers, and I'm using the combination, both the Apple Mac OS, screen reader and windows, because they have different strengths and limitations. Okay. And then the other big thing that I'm using is, I'm not reading so much physics and mathematical notation anymore. In human computer interaction, it's more like an interface, right? So I can just use PDFs. And sometimes I have to the optical character recognition. Okay, so convert into a slightly better form of like HTML. Yeah, it's easier to read. He'll even do like conferences tries to put lots of emphasis on accessibility, they're still not the best quality sometimes. Okay. And I think those are the main two things, because sometimes I get some support. But yeah.

D Dan Axson 11:29

And do you think over the five years that the resources that are provided to you for teaching or for resource or those that you find from conferences or otherwise have improved? Or do you think is still the same same issues are cropping up? So having to do OCR, for example, on the PDFs? Is that something you've always had to do? Specifically, in terms of

D Daniel Hajas 11:47

PDF? I think that was a big, big improvement in the last five years. In the beginning, it was almost to the PDF, no way I can guess anything else. Now Muslim PDFs artist that to certain extent, sure. And also, I'd save more, more and more often that sometimes publishers who have media formats, they do like an online version as well. Okay. So more sort of HTML format. And that's very helpful. And what on the other hand was improving is something called Matt, Emma, so it's a mathematical markup language, okay. So previously, if you came across even the simplest equation, or some sort of mathematical notation in a publication, it will be more likely implemented as picture performance. Just either use PowerPoint, or Mertz make it an equation, you sort of make a picture of an insert into the PDF form, which is not the best way to do. Yeah. And now with this mathematical markup language, which sort of slightly slowly becomes an integral part of HTML. itself, it's easier for the screen readers to render show

13:00

reality. And so

D Dan Axson 13:05

you know, we talked a lot about reading and mathematical formula can be read. So you know, you've done a physics degree in your, in your, in the School of informatics now in the research, so there's obviously lots of data, but also charts and images, graphical representation, that was presented quite a challenge.

D Daniel Hajas 13:28

Yes, indeed. I mean, it's very difficult. There are solutions out there. For a while, like brand ambassadors, which can do like an unboxing, cross or smell paper, right, you just basically applied sort of a chemical recorded paper and some heat to raise lines, black lines, innovator. But almost all of these are either expensive and very time consuming. Sure. You still even though the output is accessible, you need somebody cited to design these materials, very heavy guidelines how to make a good amount, because you might do like a tactile diagram, but it might be very, very badly designed, right? If it's, let's say, a one to one translation of something visual, then it's almost useless. So in practice, when you have your demos every two, three weeks at the university, yes, so much to learn. You know, besides all the other challenges, then it can sometimes very impractical to do all these, especially if you you know, for example, bait funding for six months, and the course is almost over. Yeah, yeah. So in practice, sometimes it's a case of like, okay, let's just sit

down, we have these 10 Tigers to do for tomorrow. Can you just describe it to me?

D **Dan Axson** 14:39

Okay. And typically, then you say you've relied on an actual person? Yeah. So actually, this does tie in quite nicely, because it brings us up to, you know, effectively, I guess that's the, you know, your your origin moment. For graphical, right.

D **Daniel Hajas** 14:54

Yes, yeah, exactly. So, tell us a

D **Dan Axson** 14:57

little bit about how that came about, you know, what, what was the spark was, you know, we sat in a pub with your mate. So you know, what happened. So

D **Daniel Hajas** 15:04

there were two key moments. First one is thanks to Professor Kathy Romer. She's a professor at the physics department. And she had the first year course, but she said, Well, you know, just come up with some sort of programming challenge, you can do anything you want for the whole term, presented as a sort of final assignment and the end of the course. And you know, you could I was even thinking, maybe do like some sort of audio Rubik's Cube or some sort of funny application. But then at the time, I also read a lot about braille displays just for you print, text, tactile display. And also at the same time, we learned about, you know, just how images are made of pixels and matrices and all that. So I had this idea, well, if you can do Brown, just in one line, we could do like a matrix of tactile pixel that you could just make an image. Yeah. So instead of just fiddling with Tachyon, boasting Nicholas have almost like a complete screen that you digitally or electronically and post the images on the phone. Yeah. So that's gonna be quite cool. And I wrote a proposal we didn't actually do during those five weeks, anything physical, yeah. had the idea. And there is a bit of time, you know, prototyping, getting people introduced to the idea and get some resources. So ultimately, we wanted to turn scientific diagrams into something tactical, you know, they are easy and convenient. But unfortunately, we realized, this is not so easy, okay. And this is what basically broke my PhD because it's a whole research field on its own for the last 2030 years, our faces. And today, there isn't really an ultimate solution, like a great solution. So it's still a lot to learn and research with. So instead, we transition into this other idea I described to you this practical thing that

about, it's often easier just to sit down for an hour, somebody and they describe it to you. But the problem there, even though it's quite easy, it's not always possible, in a short space of time to find somebody who has the skill, yeah, and the time to do it. But then, equally, you don't necessarily need to be sitting next to each other up just online submitted diagram for somebody on the other side of the world could describe it to you if they are available. So this is something that we found is more feasible to develop. So one of my friends from physics thing lead on was not important, but he is very good with the app development. So he the online platform, yeah. And then now we are trying to put the community behind it. Like I can just run diagrams for people.

D Dan Axson 17:44

So I mean, it can't just be anyone can score the diagram.

D Daniel Hajas 17:49

It's a big debate. Ideally, it would be good to have people who have experienced, it seemed like I was also describing them. It's Matter of fact, can we teach people to describe diagrams, effectively or not? Because I'm in the comments are fairly simple. But equally, you know, people might not feel confident, you know? So it's a matter of like, do we want to limit our community to more like the sort of scientifically trained minded people and having a higher quality? Perhaps, maybe smaller community? Yeah. Or just, you know, put lots of effort in super clear guidelines? Almost, you know, good marketing, how people can do this. Yeah. And then have a wider community? And how, how has it been received? So you've

D Dan Axson 18:40

tested this on other people, right?

D Daniel Hajas 18:41

Yes, I think the idea, we always hear that some people really appreciate the simplicity of the idea. And how useful it could be. Yeah. But in practice, we find it difficult to recruit people from both sides, a, you know, one side of volunteers who can continuously engage. But on the other side, it's a bit of a chicken and egg problem. Because as science is so difficult to do with a visual impairment these days, not many people want to do it. Right. So it's hard to find like, okay, here's a solution that could make it much easier in the future. But it's hard to sort of prove it. Yeah, many people using it.

D Dan Axson 19:23

So I guess the other challenges help. It's something that could eventually like you say, chicken or egg, but I guess it's something that could eventually show people actually, it is possible for you to go through these subjects, because the tools are there to help you navigate, navigate those those challenges.

D Daniel Hajas 19:37

Yeah, exactly. So what we are trying to do instead is, instead of asking people who might, you know, need help directly as another to try to use it and have some volunteers, maybe just go for institutions or agents, who provide this sort of content. So like a book, publisher, publisher, or conference, baby news, or even just journals to have the articles online with all the diagrams, it will be a first really good step to have all these diagrams or an accessible on the event. And of course, people don't even need to submit anything, they can just go online and realize it actually happened to me this scientific publication from beginning to the end without major difficulties, I have access to all the content. So

D Dan Axson 20:26

where can people find out more about graphical and Iris, the product you described?

D Daniel Hajas 20:30

So we have a website, which will be trying to keep up to date? It's called a graph. You said, God, gr, ey, pH and w.com. Yeah, and there is a fairly clear link to virus as well, which is a separate application. Yeah. And it's not, not sort of a store application, like an Android, Google Play or, or the App Store. But it's event, almost like a website. So you can download it pretty much any a computer or phone and use it.

D Dan Axson 21:03

I'll put the details again in the show notes. So people can find that and information about yourself as well as a link to the Twitter use Twitter. Yeah, yeah, I'll put that on there. And if there's anything else you want on there as well can put that in. And I'd like to sort of wrap up a bit. But what I'd be curious is if if you could give one piece of advice to the lecturers at university here, who are creating content for their modules, and, you know, courses around the university, what would be the single most important thing they consider when creating something?

D Daniel Hajas 21:38

If they have specific students in mind, always checking them what works with them, because even though there might be guidelines, which is why the case of is actually not the best solution for the students, when we have students, if you just, you know, generally want to make your content as not just accessible, but usable for your whole group of people. It depends based on the content. But I think it's it's good to use, always with us, like standard standardized rules. So if it's a case of, again, I can just refer back to sort of scientific subjects. Biggest experience we have is also big problems. There are people who know like a little bit, you can use sort of built in comments, which are quite intuitive. And you can define equally, if not much more. comments for the Dan symbols on your own. It's like a personalized comments. Yeah. And that's the big problem. Because, you know, lecturers like to agree with, I don't know, a comment of 10 characters into just to make it faster. Yeah. But then, of course, it screws up a bit old. Because they have to operate and based on languages. So even though if it might feel like it's fine to take a shortcut,

D Dan Axson 23:04

just don't don't just go with like a standard. I really am. Your initial response there, I think is really important. Because we can have all these standards, we can have all these guidelines, and we can follow them. But actually speaking to your students, is often the first step because those guidelines might not work for them. Yeah, yeah. Very important. And actually over the over the next few months, we're going to be doing a lot of work for the staff at university around accessibility, because the EU legislation is in place around public body websites, and things like that. So yeah, we've got work to do around this. But I think that's, that's a really crucial message. So thank you for that. And there's anything else you'd like to talk about before we wrap up?

D Daniel Hajas 23:47

I think we covered lots of aspects I had in mind. So not in the moment, maybe for a new podcast episode.

D Dan Axson 23:53

Yes. All right. Well, Daniel, thank you so much for your time, I hugely appreciate it. I know you're busy. And you know, the problems you're solving on small ones. So you've got you know, you've got work today. I can't wait to see how it develops. And yeah, listeners, I encourage you to check out the work of Daniel and his colleagues, you know, the work that they're doing. So thank you again, Daniel. Thank you. So that's the interview, I really

hope you enjoyed listening to what don't have to say as much as I did, chatting to him. And again, apologies for the audio quality, some really great information, some great insights. But most of all, some really important advice there at the end, which I thought was really insightful around, you know, how best to prepare your content. And the stuff you design and make for students is simply to ask your students. So if you have a student who has a specific need that you're aware of, or someone's come to you, you know, ask them what works for them. Because not one size does not fit all, as we know, we can put all the groundwork in place and have a really good baseline. But it's really important that we have the conversation with our students as well. So please take that on board. With respect to digital accessibility, we're going to be doing a load of work over the summer for colleagues across the university to support you with this. So please do get in touch if you have any questions or want to find out more. And we'll certainly communicate that in time. Now official cut of the show, and this is provided by my colleague kitty horn and the shortcuts of the show is shift f3. That's right, shift f3. What does shift f3 do you ask? Well, if you're in word and you highlight some text, and you do shift f3, it will change the capitalized capitalization is if you need to say of the words, so it'll cycle between capital and capitalize in the beginning of a sentence to capitalizing every word, capitalizing everything, and so on and just keep cycling through. So shift f3 for easy for all your capitalization needs. Thank you, Kitty. And one more thing for this show. And that is to tell you unusually, I know what's coming up on next there on the next show. And we've got a really interesting lineup for you. And those of you listening may know at technology enhance learning, we do seminars throughout the year. And this week, tomorrow. Actually, as I record this, we have one title, technology and education opportunities and challenges for equality. And this is going to be a great event. This is a panel event. And we are joined by Dr. Myron deep well, who is the CEO at alt, that's the Association for learning technologies. And Mary Krell, who is a senior lecturer in media and Film Studies at the University. And they're going to speaking about the opportunities and challenges that technology can provide for or provides has for equality. And we know that technology is not a new thing. It's been a around for as long as we've been able to create things, as you know, from fountain pens, printing presses through to iPads and virtual reality. So I'm sure quite a lot of different things will come up. The event will be chaired by Dr. Thompson Hinton Smith, who is a senior lecturer in higher education, again at the University of Sussex. And we'll have a panel discussion and they'll be a q&a and everything. And I've got the opportunity to chat to panel after the event tomorrow. So listen out for that, and I'll publish that and communicate that out and as when I'm really looking forward to that. I'm also going to be joined joined by my colleague kitty horn for that as well. So that's all for today. Thank you for listening. I hope you enjoyed it and I'll be back next time. Take care Bye