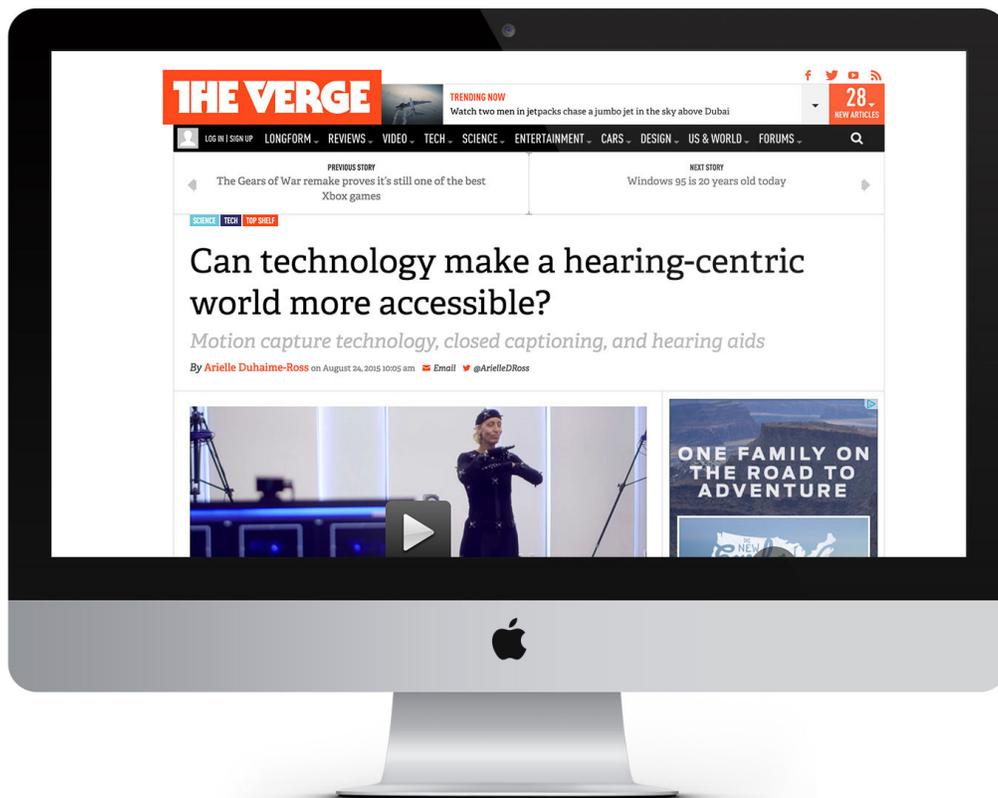


CAN TECHNOLOGY MAKE A HEARING-CENTRIC WORLD MORE ACCESSIBLE?

Motion capture technology, closed captioning, and hearing aids

By Arielle Duhaime-Ross on August 24, 2015 10:05 am

URL: <http://www.theverge.com/2015/8/24/9183547/assistive-technology-devices-listening-eargo-gallaudet>



About 1 million people in U.S., over the age of five are functionally deaf.

And fifteen percent of U.S. Adults say they have some trouble hearing. But here's the thing, most of the U.S. is built around the idea that people can hear and understand words that are spoken out loud without difficulty. Because of that, quite a few people have to deal with obstacles created by a hearing centric system, but there are people thinking about that, and it's their goal to make the world more accessible for everyone.

Accessibility Tech in a Hearing-Centric World

The myth has been that deaf children aren't good readers, but our research findings are trying to dispel that myth. We had mounds of data that say that early sign language development will support literacy development in deaf children.

ARIELLE This is Melissa Malzkum she's the director of Gallaudet University's Motion Light Lab. Her team has been working with motion capture technology to create animated avatars that can communicate in American Sign Language. Their goal is to make videos like this one, with animated characters that sign with deaf children; especially those who aren't old enough to read closed captioning.

INTERPRETER Motion capture can build a 3d avatar. We can create animals that sign to deaf children that they would be able to understand. The opportunities are endless.

ARIELLE To create these 3D avatars, a member of the Motion Light lab puts on a suit, dotted with little white markers. Then the person tells a story in ASL. As they're moving, eight cameras surrounding them capture 3D coordinates for each of the markers. The data then gets sent to a computer program, where members of the lab can make sure that the movement was captured accurately. The most amazing part is that if you know sign language, even though I'm in the dark, you will still be able to understand me. I've shown my team. I've shown other deaf people and they're amazed, even though we're just a bunch of dots, they're able to understand what I'm saying. The potential is amazing.

ARIELLE The motion light lab has also been working on a series of storybook tablet apps that cater to children who are deaf. Animated drawings add a kind of novelty to the learning process. They engage kids in a way that a video of a person signing on their own, might not be able to.

ARIELLE So for somebody who's opening up the storybook app for the first time, what would they find?

MELISSA The first time children open up the storybook app, they always seem super excited. We have a professional storyteller, and narrator. As she's telling the story, there's animation going on in the background. Now, there are some words within the text that are highlighted, so when they click on that highlighted word, the narrator'd come up, they will sign the word, finger spell it and then sign it again. That is the way that they can make links, between their native language and the written form of English.

ARIELLE So by exposing kids early on to sign language, you're also enhancing their ability to read English?

MELISSA They need early exposure to language. When I think about the future, I'm excited, because we have access to this technology; there are so many possibilities. 3D Landscape. Virtual Reality. We want to make sure we impact a variety of different fields and see this convergence of science and technology, and art, so that's what we're doing here.

ARIELLE Gallaudet's efforts have yielded apps that appeal to kids who are deaf in a way that a cartoon built for the hearing might not. But what about people that have trouble hearing spoken English and still want to access mainstream T.V. Shows, Movies and music videos? In those cases, closed captioning still remains supreme.

MAN We've worked on a lot of the music videos that come out of a record label called Cash Money Records, for example we worked on the "Beez in the Trap" music video.

ARIELLE This is John Pellicano. He's the owner of Digital Media Services, a company that does closed captioning for companies like Hulu, Amazon, Netflix, among other things.

JOHN We've done Stark Trek the Next Generation, Beverley Hills 90210...

ARIELLE What is the process for closed captioning?

JOHN We have to transcribe the show, commercial, or movie, to get all the dialogue into a computer, and then we do through a process of placing that on the screen so we don't cover peoples faces or graphics. The time frame for something like that for an hour movie, it probably takes us four hours. Those T.V. shows that you've mentioned, some of them are kind of older.

ARIELLE Are you re-doing closed captioning?

JOHN Not everybody's watching T.V. on T.V. anymore. They're watching em' on all these devices, so these programs get sold to the different platforms, they have to be re-closed captioned.

ARIELLE The change that John is talking about has to do with an FCC rule designed to promote equal access to all forms of programming. The rule, which was expanded last year demands that clips and full length episodes offered online have to be closed-captioned. According to John, the quality of closed captioning has improved quite a bit recently, in part because of this rule.

JOHN It was just the minimum effort that was put in. It really was embarrassing.

ARIELLE YouTube also offers closed captioning, which is great, except YouTube's system is completely automated. That means despite the platform's best efforts, a lot of the texts just come out as gibberish.

JOHN We've always done, like, baby-led feeding, where whatever we're eating, they're eating, but I think there are definitely lots of times when we're eating something that isn't quite right for them, so if we had something we're eating and then you could just, like, steam it or blend it up and then it would be a lot easier for them.

ARIELLE Let's just say that John isn't a fan of YouTube's algorithms

JOHN The Automated way doesn't work. Even the voice automation in your car, it never works.

ARIELLE Ultimately, using something that's automated, doesn't actually make things that much more accessible because of all the errors

JOHN I mean again, if you're willing to accept those errors. I mean we don't accept those errors. We don't strive to deliver, you know, content that's not right.

ARIELLE Closed captions can make the world of visual media a lot more accessible, but every day interactions don't come with rolling text. For people with mild hearing loss, hearing aids can make a big difference.

MAN So, let's initially insert this into your ear.

WOMAN There's lots of little noises.

MAN How does that feel?

WOMAN That's good

MAN Ok, the little noises are...

ARIELLE The hearing aid that was just placed into Sophie's ear is called an Eargo. It's a tiny device designed for people who, like Sophie, have mild to moderate hearing loss. Now, I'm sure you've already noticed, but the Eargo really doesn't look like a traditional hearing aid. That's because it was modeled after a fishing fly. The flexible fibers are supposed to hold the device in place, without blocking the flow of air to the ear. The Eargo is kind of extreme in terms of design, but it certainly isn't alone. According to Thomas Roland, a cochlear implant researcher at New York University, hearing aids are getting smaller, and the people who design them have fixed a lot of issues that people used to complain about.

THOMAS One of the classic problems with hearing aids was feedback. You know you're—You got a microphone and then it's amplified and it's coming out the end and it's being re-picked up by the microphone and you get feedback. That's gotten better and better, and digital technology can do frequency specific responses so you can sort of fine tune the hearing aid's response to a patient's hearing loss.

ARIELLE Unfortunately, there's still a lot of stigma tied to wearing hearing aids, but companies like Eargo are trying to change that. Their hope is that if they can convince people that a hearing aid doesn't need to look like a big clunky earpiece to work, then they might be able to make every day tasks like talking on the phone or enjoying a meal in a noisy restaurant just a tiny bit easier.

Normally this is a part of the video where I tell you that things are getting better and the world is becoming for accessible than ever. While that may be true, that doesn't actually mean that we live in an accessible world. Our society was built with a very specific type of human in mind, and that means we looked over a lot of peoples needs and preferences. A world that's truly accessible is one that's adaptable and inclusive. Technology's helping, but if we really want to live in a world that works for everybody, we're going to have to change our mindset.