Visual Aid

There’s a device that not only allows those with vision loss to see, these electronic glasses also restores individuals’ independence, confidence, self-esteem and freedom.

October 1, 2017 By Kate Ferguson

When Marvel Comics launched a crime-fighting character named Daredevil, the publishers thought it would be fun and interesting to show that, in spite of having a disability, a blind superhero could do everything better than anyone else. But what if just by putting on a pair of glasses, a person who is blind could be granted the power to see? In part, this idea is one that first drew materials scientist Brian Mech into the field of optical design and engineering when he joined a group of researchers at a company called Second Sight to help develop an artificial retina to restore vision to the blind.

Interestingly, Mech, the president and CEO of a company named eSight that’s located in Toronto, knew about Daredevil from his son but wasn’t aware that he was blind. If he was a real person, maybe Mech might have suggested to him that he try on the eSight 3. These electronic glasses are the latest generation of specs produced by eSight that allow those who are classified as legally blind to see. (If you can read only the biggest letter—E—on an eye chart, and lenses are unable to improve your eyesight, doctors consider this being legally blind.) “In so many cases, we get people back to 20/20, sometimes even better than 20/20,” Mech says.

The device uses a headset, a special prescription-lens frame and a tool called a controller. People experiencing low vision are able to see because the eSight 3 can capture a picture of whatever an individual is looking at with a high-speed camera built right into the glasses. A powerful computer in the glasses processes the high-definition image and magnifies the video image up to 24 times on small organic light–emitting diode screens that are situated in front of each eye.

“That video is processed by very advanced microprocessing and allows us to enhance the image,” Mech explains. “At the same time, the user has a small controller that they can use to control brightness, contrast, magnification and a number of other factors in order to enhance the image.”

In addition, the glasses have the ability to autofocus on what an individual watches. For example, if someone is looking down at a book and glances up and across a table at another person and then across the room, the device automatically refocuses almost instantly. But for the device to work, individuals can’t be totally blind. “You do need to have some remaining sight,” says Alexandra Dalimonte, an outreach coordinator for eSight. “Ideally, that would be peripheral vision because that is what we are founded on.”

Another cool thing about eSight 3 is that the screens on the glasses tilt up and out of the way, so if the person wearing the device needs to access all of their peripheral vision they can just glance up at the screens for detail. This patented technology is called Bioptic Tilt. “The reason this is important is because your peripheral vision is a very critical aspect of your vestibular system, which controls your balance and is a key part of your safety system that tells you when things are approaching at a rapid speed from any position so you can avoid them,” quote attribution. “In addition, peripheral vision also helps us detect objects. That’s why when people are walking or moving around, it’s really important they can access their side vision. These glasses allow them to do that.”

The engineers who created the glasses designed them to be as light, small and, therefore, as comfortable as possible. “Because someone would be wearing the glasses on their head, we didn’t want the device to place too much pressure on the ears or on the nose so that it became painful,” Mech says. “If you look at eSight and pick it up, you’ll be shocked by how light it is.”

Perhaps the only drawback to eSight 3 is the price. The glasses cost almost $9,995, a significant reduction from the $15,000 pricetag of the electronic glasses’ prior generation. But Mech says the company is committed to helping those who are legally blind get eSight regardless of their ability to pay.

To assist people who need the glasses now, eSight organized programs to solicit money from those who want to buy the device for others or wish to contribute funds to this effort. The company also launched an affordability program that helps legally blind individuals secure funding to buy the glasses. In addition, “we’re trying to come up with more creative ways to help people afford the glasses as well,” Mech says.

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