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For the Blind, an Actual-Reality Headset

Not just Star Trek fiction, a new visor from eSight is a lightweight, high-contrast vision system for legally blind people

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Yvonne Felix’s eyes don’t work well enough on their own for her to read, recognize faces or cross the street without help. But when the Toronto-based artist and mother puts on a new kind of camera-equipped headgear, she looks at me like no one has before.

The visor that allows legally blind people to see is no longer Star Trek fiction. Leaps in augmented-reality technology are being used to help people with severely low vision gain back enough sight to function, and then some.
Ms. Felix, who has Stargardt disease, wears a device from a company called eSight. The eSight 3—which weighs less than a quarter of a pound and is operated by hand-held remote—captures the world through a camera system and then displays it on OLED screens that sit very close to the eyes. Legally blind people like Ms. Felix have some limited vision, and eSight’s displays are tuned to make use of it. By dialing up contrast and allowing users to zoom in, it can dramatically amplify sight without a surgical procedure.

“Being able to see that people’s pupils actually dilate and contract is quite amazing,” she says. The gear has allowed Ms. Felix to get a desk job and travel on her own. She’s also become a spokeswoman for eSight.

Efforts to make noninvasive vision tech started decades ago with bulky TV-like devices that magnify and increase the contrast on books. In the 1990s, NASA developed space goggles with a camera and two black-and-white cathode-ray-tube screens.

To Star Trek fans, this system recalls the blind “Next Generation” series character who wore a vision visor. “I remember thinking that Geordi La Forge was my hero and that one day there would be something like that and when it came out, I wanted to try it,” says Ms. Felix, who is 36.

The eSight visor, in development for 10 years, is reaching a level of maturity. The third-generation, which debuts this week, weighs less, has a wider field of view and just looks cooler. eSight—along with other makers of head-mounted low-vision aids such as OrCam and Nu-Eyes—is taking advantage of tech that is cheaper, smaller and faster because of popular gadgets like smartphones and virtual-reality headsets.
When Ms. Felix allowed me to try on her visor, the images I saw were very high contrast, and the screens were positioned to allow me to also make use of my natural peripheral vision. The battery lasts about 6½ hours.

Using the hand-held controller, users can zoom and pan, like on a street sign, or plug in a TV feed directly. Because of those capabilities, Ms. Felix said in some cases eSight probably lets her see better than me.

“There is no device that’s a magic solution for all problems,” says Walter Wittich, an assistant professor at the University of Montreal’s School of Optometry, who is part of the first independent research project into the tech. Still, Mr. Wittich says it can be useful for the people with low vision who benefit from magnification, for whom most current options are hand-held.

Not everyone feels equally comfortable operating the gear. Mr. Wittich plans to release initial results from the study in May, and says one thing that is clear is that people who click with eSight immediately see a boost in quality of life. “It is working very well for some people already, and there is still quite a bit of potential in both the design and electronic capability,” he says.
ESight says its tech has worked for about three quarters of the people who have tried it. Their biggest hurdle is getting the technology paid for. They have sold about a thousand to date, and this new visor costs $10,000. While the device has FDA clearance as a Class I medical device, most insurance doesn’t cover it.

“That is a battle we are starting to wage,” says eSight Chief Executive Brian Mech. Some employers and other third parties have picked up the tab, he says, but the challenge is to reach users who have limited resources because their vision challenges keep them from work.

“Yes, that is an expensive piece of equipment, but it can really do a lot for people,” says Gislin Dagnelie, an associate professor of ophthalmology at Johns Hopkins and an adviser to the company. While the National Federation of the Blind estimates there are 1.3 million legally blind people living in the U.S., Mr. Dagnelie thinks at least a hundred thousand people could benefit from eSight’s tech.

For an artist like Ms. Felix, it has offered more than routine improvement. She worked for decades in sculpture and thick paint, because she felt her work as much as she saw it. Her favorite artist was Vincent van Gogh, because he also likely suffered from vision problems.
She recalls the first time she saw “Starry Night” with her eSight visor on, it made her cry. “I saw every little stroke. When I saw the color mixtures and how thick the paint was, it was the most overwhelming moment of my life,” she says. “I thought that never in my life would I be able to see something so beautiful.”