Company launches voicebank to help the speech-impaired communicate

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Micah Fowler, left, and Cedric Yarbrough participate in the "Speechless" panel during the Disney/ABC Television Critics Association summer press tour in Beverly Hills, California, August 4, 2016. Photo: Richard Shotwell/Invision/AP

Ryan. Alex. Siri. These are names of robotic voices that are often programmed on cellphones or tablets. They also become identities for people with speech disorders who rely on technology to communicate.

Now some speech scientists are developing customized voices to reflect the diversity of the people who use them. To do it, they are tapping into a vast network of volunteers who are donating their voices to share with people who cannot speak.

2 Million People Suffer From Speech Disorders

The effort to build an international "Human Voicebank" has attracted more than 17,000 volunteers from 110 countries. One is Priyanka Pandya, a 16-year-old from Columbia, Maryland, who plans to spend her winter vacation recording a string of sentences into her laptop.

"To be able to give somebody the gift of voice," said the junior at Glenelg Country School, "I think that's really, really powerful."

Her voice could be used to help one of more than 2 million Americans who have severe speech disorders and need help to communicate. It's a problem captured in the television series "Speechless." The main character, a teenager with cerebral palsy, relies on technology and a personal aide to act as his "voice" at school.

Company Customizes Voices For Users

"Everyone has a voice," said Rupal Patel, founder of VocaliD, the Belmont, Massachusetts, start-up that launched the voicebank. "Even people who are speechless have sounds that are unique to them."

Her company designs personalized voices by recording the unique, if limited, sounds of the user. Then those sounds are blended with a larger sample - usually six to 10 hours of recordings - from a voice donor, matched by age, sex and region.

The company is developing voices now for its first 100 customers, but researchers have been honing the technology for years.

Tim Bunnell is head of the Speech Research Laboratory at the Alfred I. DuPont Hospital for Children in Wilmington, Delaware. He has engineered voices for more than 1,000 people with degenerative diseases such as amyotrophic lateral sclerosis, or ALS. Those people were usually able to record their own voices before they lost the ability to talk. He said it's more challenging to extend what a voice should sound like for someone who can only make a few vowel sounds.

The scientists in Bunnell's lab take the sounds and analyze them for vocal qualities, such as pitch, and record them as a batch of numbers. Then they map out the recordings from a voice donor. They merge the voices by modifying the donor voice to reflect the qualities of the user's voice.

Bunnell said, in particular, they work to match the "vowel quality" because the "color" of someone's voice is primarily conveyed through the vowels.

Voice Donors Are As Young As Age 6

Patel, who is also a speech technology professor on leave from Northeastern University, worked with Bunnell as a researcher. When she decided to bring the technology out of the lab, she developed her own method for blending voices and turned to crowdsourcing for help. Crowdsourcing is asking for assistance from a large group of people, often online. She wanted to gain access to enough voices to reflect the diversity of potential customers, which could include a middle-aged man from Alabama or a little girl from Ireland.

Since Patel announced the voicebank two years ago, the response has been overwhelming, she said, with donors ages 6 to 91 logging on all over the world. People donate for many reasons. Some are practicing English or working toward community service requirements. Some have throat cancer or degenerative diseases such as ALS and could eventually receive voice help themselves.

Pandya has gone on mission trips to South America, and she started a service organization at her school. But the aspiring biomedical engineer said she was inspired to help someone speak and also fascinated by the technology and the ability to combine voices.

She began recording her voice last summer, using headphones and speaking into her computer as she read from her screen. Then she recruited family friends and others to do the same.

VocaliD Gives ALS Patient His Voice Back

Patel said she is continuing to simplify the process to build voices more cost-effectively and efficiently. The $1,249 price tag puts it out of reach for many people. For donors, it can take six to 10 hours to record the 3,500 phrases required to complete a voice sample. Only about 10 percent of the donors have made it all the way through.

Also, people's voices change. The company is looking for donors who are willing to record their voices, and then record them again a few years later as they get older. But some of the first customers say they are happy with the results.

John Gregoire, of Windham, Maine, was one of the first to receive a customized voice last December from VocaliD, then in a pilot phase. The voice came eight years after he was diagnosed with ALS and more than six years since his voice had become unintelligible to everyone except his wife and youngest son.

Since then, his wife, Linda, said she got used to hearing him speak with "Ryan," the American-sounding male voice programmed into his iPad. When they heard his customized voice, they reacted instantly together. Linda said, "It was him."

The couple is raising money now to build a sound studio to encourage people in their community to make high-quality recordings of their voices to donate.

"Having a distinctive voice is like getting something back that was stolen," John said.

Quiz

1 Which central idea is BEST developed by the paragraph below?

> *Her voice could be used to help one of more than 2 million Americans who have severe speech disorders and need help to communicate. It's a problem captured in the television series "Speechless." The main character, a teenager with cerebral palsy, relies on technology and a personal aide to act as his "voice" at school.*

(A) Blended voices will be customized to match users and replace the robotic voices on which they often rely.

(B) A group of speech scientists is working together to create an international human voicebank.

(C) People are becoming more aware that there are many with speech disorders who need help to communicate.

(D) Many people have volunteered their time to a voice bank to help people with speech disorders.

2 Which of these sentences would be MOST important to include in an objective summary of the article?

(A) Bunnell is the talented head of the Speech Research Laboratory at the Alfred I. DuPont Hospital for Children in Wilmington.

(B) Patel's voicebank has crowdsourced volunteers from all over the world to reflect the diversity of potential customers.

(C) Pandya has generously donated her vacation time to recording her voice and has even convinced friends to do so as well.

(D) Gregoire got a customized voice after his own voice tragically became unrecognizable to most of his family and friends.

3 How does the final sentence of the article refine the idea that customized voices are invaluable to those who receive them?

(A) by exploring John Gregoire's feelings before he received his custom voice

(B) by explaining that John Gregoire disliked the sound of his robotic voice

(C) by suggesting that John Gegoire feels more like his old self since receiving a new voice

(D) by showing John Gregoire's children are extremely happy to hear his old voice again

4 What is the section "Company Customizes Voices For Users" intended to accomplish?

(A) It is intended to demonstrate the challenges of finding and customizing the right voices for customers.

(B) It is intended to explain the reasons why Rupa Patel believes it is important to make customized voices.

(C) It is intended to describe the limited sounds that people with ALS and other speech disorders can make.

(D) It is intended to illustrate the process by which Bunnell discovered sounds that are distinctive to various users.