

A Glove That Speaks Volumes



January, 2002

By Katie Dean

Wired

2:00 a.m. Jan. 28, 2002 PST

Instant messaging has improved communications for the deaf so significantly it's been called a "godsend" by one. Now, a glove that can translate American Sign Language into text may improve communications even further.

Eighteen-year-old Ryan Patterson designed a sign language translator glove that works by sensing the hand movements of the sign language alphabet, then wirelessly transmitting the data to a portable device that displays the text on-screen.

The high school senior, who is not deaf himself, built a prototype of the sign language translator using a leather golf glove with 10 sensors, a small circuit board containing a micro controller, analog-to-digital converter and a radio-frequency transmitter.

"It's a very novel idea," said Larry Scott, chair of the audiology department at National Technical Institute for the Deaf. "I think it's a great idea and there are some great possibilities for it."

Patterson's creation netted him a first place \$103,000 scholarship in the Siemens Westinghouse Science and Technology competition in December.

Like voice recognition software, the user has to train the glove before using it. A person loads the software into a computer, trains the program, then downloads the data to the portable receiver (about the size of a cell phone).

Unlike voice recognition software, however, it only takes a few minutes to train the program.

"Just like people have different voices, they also have different-sized hands and different hand movements," Patterson said.

The device only translates the alphabet, but a person can customize a hand movement to mean a particular word.

"If you have somebody who primarily uses ASL and they're working in a non-signing environment, then there's a real possibility for it," Scott said.

"It's fascinating!" Alethea Boyer, a deaf student at NTID, wrote in an e-mail. "I like the idea! I understand that it's just for finger spelling right now. It would be great if (there) was more depth later, such as additional signs."

Mei Kennedy, an instructional designer at Center for Applied Special Technology who is also deaf, called the glove "a very interesting notion."

Yet she also believes that only translating the alphabet "presents a drawback because a very few people only fingerspell to communicate," Kennedy wrote in an e-mail. "It would be inconvenient for me to fingerspell constantly."

Patterson thought of the invention in a restaurant. He saw some people signing and using a human interpreter to communicate with their companions.

"I realized that you couldn't be very independent if you couldn't speak," Patterson said. "I thought an electric sign translator would make things a lot more convenient."

He was motivated to pursue his idea when he read a story in his local paper about a teenage girl who couldn't speak. She used sign language with an interpreter and the interpreter spoke for her.

"One of the comments she made was that you don't have as much privacy," he said. "She had to take an interpreter with her all the time."

Patterson has built two prototypes of the glove and has talked with several companies about the product, but no one has signed on to produce it yet. He's considering starting his own company to develop the glove and take it to market.

He has a provisional patent on the device, and will have a full patent in the next few months.

While the glove may be useful to those who know sign language, people who want to respond to a hearing-impaired person cannot use the device, since it requires using ASL gestures.

"The benefits would be for hearing people, for instance, we can teach them and they can look down at the device," Boyer wrote. "It looks like it's only one-way."

"Yeah, in a way it would be a one-way communication," Patterson said. "But if they can't hear, they're usually good at reading lips," he said of the hearing-impaired.

He said it will be useful to others beyond the deaf.

"Other types of diseases keep people from speaking but they can still hear -- like throat cancer," he added.

Though it is still in the early stages, Patterson is developing a voice-recognition component to the device that will print spoken word on the display, enabling hearing-impaired and hearing people to communicate better.

Copyright (c) 1994-2002 Wired Digital Inc. All rights reserved.