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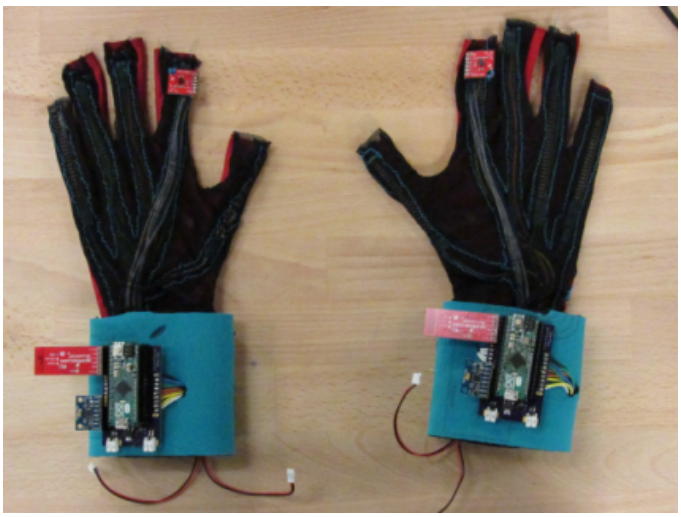
Thomas Pryor and Navid Azodi, University of Washington (Seattle, Wash.)
$10,000 Lemelson-MIT "Use it!" Undergraduate Winners
SignAloud: Gloves that Transliterate Sign Language into Text and Speech

The Challenge: There are 70 million people who are deaf in the world[i], but many people do not know how to use sign language to communicate with this community. Thomas and Navid's invention was built off an interest in creating a way to transliterate American Sign Language into a verbal form instantaneously, in an ergonomic fashion and in the form of a consumer device.

The Solution: Thomas and Navid developed SignAloud, a pair of gloves that recognizes hand gestures that correspond to words and phrases in American Sign Language, using resources at the University of Washington CoMotion MakerSpace, a place that offers communal tools, equipment, and opportunities for students. Each glove contains sensors that record hand position and movement. As users put on the gloves, the device calibrates to account for differences in sensor placement. Data from the sensors is sent from the gloves wirelessly via Bluetooth to a central computer. The computer looks at the data for gestures through various sequential statistical regressions, similar to a neural network. If the data matches a gesture, then the associated word or phrase is spoken through a speaker.



Application and Commercialization: Thomas and Navid's plan to further expand and refine their early-stage prototype while engaging members of the deaf and hearing impaired community, and those interested in learning and working with American Sign Language in future iterations of the device. The gloves can also be commercialized for use in many fields, including medical technology to monitor stroke patients during rehabilitation, gesture control of remote devices, and enhanced dexterity in virtual reality. The gloves offer superior resolution and accuracy to other hand gesture recognition devices currently available including the Myo Armband and the Leap Motion.

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[i] http://wfdeaf.org/faq