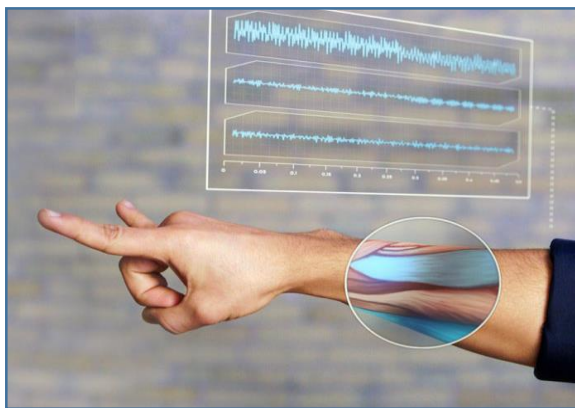


Background/Motivation:

The Myo Armband is a device worn on the forearm that detects gestures made with the hand by sensing electrical pulses (EMG signals) generated from muscles as fingers are moved and the wrist is bent. If you place your hand on your forearm and start to make gestures with your hand, you can feel what the Myo is sensing.



Communication for the hearing impaired is limited by the number of people who understand sign language. For my Computer Systems Senior Research Project, I sought to develop a program that will translate sign language into a text document using the Myo Armband that I may serve the hearing-impaired community. The implications of this application would allow the hearing impaired to readily communicate with others using any bluetooth compatible device.

Translating Sign Language With the Myo Armband

By Ryan Jakiel

Computer Systems 2014-2015



Results/Conclusion:

Due to unforeseeable circumstances, the program could only be developed for a couple months. It successfully recognizes sign language letters and lays the groundwork for a future project implementing more sign language gestures.



Methodology:

This program uses EMG signals from the Myo to detect sign language gestures made with the hand. The Myo sends raw EMG data in the form of an 8 Integer array about ten times a second. Each integer corresponds to the intensity of muscle pulse of that section of your arm. The program interprets the sequence of arrays as a certain gesture, and the gestures inputted are then translated to text on-screen on any Windows computer. As of now, only sign language letters are recognized, but with more research, common sign language words could be recognized, making this program more useable.



Additionally, Thalmic Labs, the producer of the Myo, may make the raw EMG data available for Android devices. Once this program makes it to mobile devices, it will become much more practical for everyday use.