Translating Glove for the Deaf-Mute Compatible with Smartphones

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For a long time, the desire to integrate into the community has yet to be feasible for the deaf-mute due to the language barrier. “Translating Glove for the deaf–mute” targets the Vietnamese deaf–mute community and is expected to assist communication between people without the knowledge of sign language and those with hearing disability, with the support of Android smartphones. The glove was specially designed to translate Vietnamese Sign Language (VSL) into Vietnamese text and speech. The glove operates based on the user's hand gestures, which are captured by the sensors on the glove programmed with simple algorithms, and can potentially become a cyber-bio-physical system in the future. Signals are transmitted through an Arduino board for analysis and sent to a smartphone application via wireless connection. The application will display the corresponding character(s)/word(s) with audio companion to the opposite person. The project innovation is the flexible capability of the glove to work with all hand sizes via calibration. With continuous updates of software algorithms and through five previous versions improved on hardware including materials, sensors and layout designs, the final optimized glove was manufactured. The prototype consists of both left and right gloves working together to perform integrated VSL two-hand gesture. Mentioned solution successfully translates complex VSL sentences, which partially facilitates the communication problem of the deaf-mute. Furthermore, the glove is capable of translating VSL into English. In the future, online machine learning can be possibly integrated into the next versions to encourage and support the deaf–mute in studying foreign languages.

Awards Won:
Fourth Award of $500