

Wearable Tech Glove Enabling Speech Through Hand Gestures

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In recent years deaf society and many other disability based communities have been neglected and alienated from modern society. By analyzing the root of this separation and developing user friendly devices this problem can be solved. When using embedded sensors one can program and compute simple gestures and actions into more complex task. This project was centered on the idea of enabling a computer to translate sign language into English. By creating a complex multiplexer circuit with flex sensors and accelerometers, and running an Arduino object based program throughout the circuit it becomes possible to manipulate analog readings into projected outcomes. The background research aspect of this project was focused on other attempts at creating a sign language glove, but with every prototype a similar problem occurred. Due to the different grammatical structure of ASL and the varied ranges of each sensor it becomes very difficult to have accurate results that can actually be used in the real world. The first objective of the project was to create a simple series circuit with one flex sensor and have the inputs read on the Serial Monitor. After completing this, write a computer program that has certain input readings translated into some letter, word, or phrase on a digital display. The second objective was to design a multiplexer circuit with multiple sensors based off of the previous circuit that computes multiple analog signals from American Sign Language (ASL) to English. The project was concluded when the circuit was sewed onto a general work glove, and the open IDE program was uploaded to the mainboard allowing for a hand to operate the gestures and manipulate the amount of resistance for each signal.