TALK TO THE HAND

Description:

Our project involves translating sign language into speech through the means of "**talking gloves**". These gloves will be equipped with electronic devices which will execute this conversion of sign language to speech. These devices include **flex sensors** (to detect bending or flexing of knuckles) and **contact sensors** (which sense contact between two fingers) to receive the input sign language letter from the wearer in analog form. An **ATMega 32 Microcontroller** transforms these analog signals are into digital signals, which are subsequently sent to a phone via Bluetooth. **An Android App**(developed by us) will then convert the signals into speech.

Our product will be of great utility to mute people. They currently face great inconvenience as only a tiny fraction of the population can understand sign language, their primary means of communication. Thus, they are forced to use an interpreter. If they use our gloves, they can become independent in their daily routine.

Our project is not a novel idea as a few companies have already attempted to develop such gloves. However, they developed prototypes at the exorbitant cost of $1000 or more. We intend to diminish that cost by a factor of 5 or more.

Plan of Action:

Week 1:Research and design of glove
Week 2: Connecting MCU and AVR programming
Week 3: Converting gestures to text
Week 4: App development
Week 5: Speech conversion and debugging

If we complete the above work with time to spare, we will try to extend our project by trying to convert gestures and actions for words.

Components:

1. Microcontroller - ATMega32
2. Flex Sensors
3. Gloves

4. Bluetooth Module
5. Android App Development kit
6. Contact sensors
7. Other basic electronic equipment

Implementation:

The reading from the flex sensors will be converted into digital signals, and the different combinations of bits received from a finger will determine its state. 5 such bit combinations will determine the letter to which the gesture points. This bit combination will be sent through the bluetooth to the mobile app which will decode it and convert it to text and speech.

Estimated Cost:

INR 8000

(This is if we use ready made flex sensors, but we'll try to make flex sensors on our own which would cut down the cost significantly)

Salient Features:

- ★ Portable
- ★ User Friendly
- ★ Affordable
- ★ Has an impact on the society

What we expect to learn by the end of the project

1. AVR Coding in embedded C
2. Android App Development
3. Basic Electronics