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Hand-To-Hand Interface for Paralyzed Person

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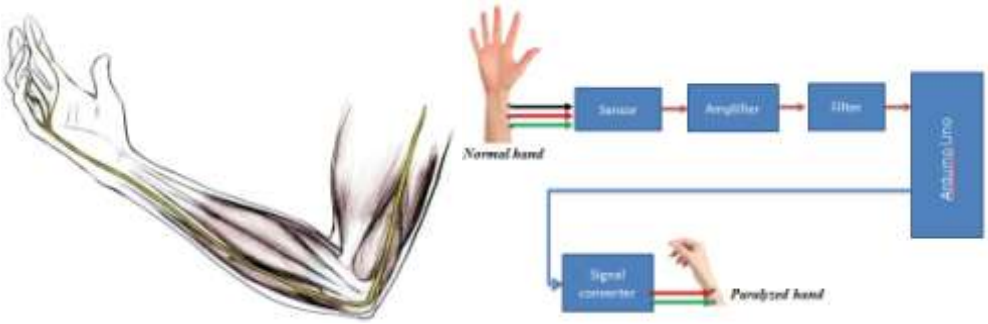
Abstract: *Now day's portability is most important. So achieve this, we are designing such a system which can carry anywhere. Using this system we can help a paralyzed person.*
Now a dayswhere everyone is busy on their on work and if any family member is paralyzed so we need to be care of him/her. To overcome this problem we design a system which is more compact. In our project we are giving a device for a person who's body id half paralyzed.
As shown in the block, whenever we attached a sensor to a normal hand and get a signal and boost it and transfer to to controller. Next we convert this signal using signal converter which is a TENS250 device and gives a signal to a paralyzed hand.

I. Introduction

- Neuroprosthetics is designing a machine that interfaces with living neurons to control a device or for sensory substitution. But what about muscles? If people has damage their spinal nerves, the muscles themselves can be stimulated, and this line of research is called "functional electrical stimulation."[2]
- For example, functional electrical stimulation can often be used to help someone stand up, or to improve walking by helping to swing a foot forward.[2]
- With electrophysiology setup and electrical stimulation, the neuro pulses of human brain have been sensed by sensors and converted into electronic signals.[2]
- The received electronic signals as mentioned above will be further converted in such a way that it can discharge the electric voltage to the paralysed person hands.[2]



Hand Nurve

Normal Hand

Paralized Hand

HARDWARE DESCRIPTION

The hardware description of the project is as follows: The device uses the Tens250 which is a method of electrical stimulation which primarily aims to provide a degree of symptomatic pain relief by exciting sensory nerves and thereby stimulating either the pain gate mechanism and/or the opioid system. The different methods of applying TENS relate to these different physiological mechanisms. Tens is most commonly delivered from small, hand held, battery powered devices. [5]

ECG SENSOR

The electrocardiogram (ECG or EKG) is a diagnostic tool that is routinely used to assess the electrical and muscular functions of the heart.[3]

The electrocardiogram (ECG) has grown for one of the most commonly used medical tests in modern medicine. Its utility in the diagnosis of a myriad of cardiac pathologies ranging from myocardial is chemia and infarction to syncope and palpitations has been invaluable to clinicians for decades.[3]

ARDUINO UNO

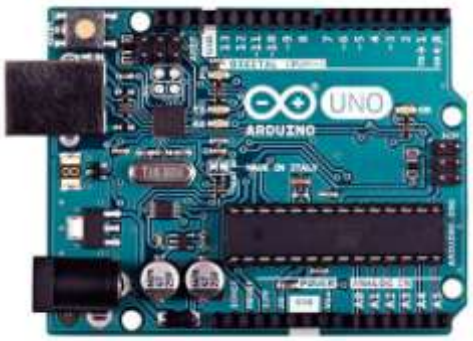
The Arduino Uno is an microcontroller based on the ATmega328. It have a 20 digital input/output pins in which 6 can be used as PWM outputs and 6 can be used as analog inputs, a 16 MHz resonator, a USB connection a power jack an in-circuit system programming (ICSP) header, and a reset button. It contains everything needed to support microcontroller simply connect it to a computer (or appropriate wall power adapter) with a USB cable or power it with a AC-to-DC adapter or battery to get started.[6]

The Uno differs from all preceding boards in that which does not use the FTDI USB-to-serial driver chip. Instead it features an ATmega16U2 programmed as USB-to-serial converter. This auxiliary microcontroller has its own USB boot loader, which allows advanced users to reprogram it.[6]

The Arduino has a large support community and an extensive set of support a libraries and hardware add-on "shields" (e.g. you can easily make your Arduino wireless with a Wixel shield), making it a great introductory platform for embedded electronics. Note that we also offer an Spark Fun Inventor's Kit, which includes an Arduino Uno along with an assortment of components (e.g. breadboard, sensors, jumper wires, and LEDs) that make it possible to create a number of fun introductory projects.[6]

This is the 3rd revision of the Uno (R3), which has number of changes:

- The USB controller chip changed from ATmega8U2 (8Kb flash) to ATmega16U2 (16Kb flash). This does not increase the flash or RAM available to sketches.[6]
- Three new pins were added to all of which are duplicates of previous pins. The I2C pins (A4, A5) have been also been brought out on the side of the board near AREF. There is a IOREF pin next to the reset pin, which is a duplicate of the 5V pin.[6]
- The reset button is now next to the USB connector making it more accessible when a shield is used.[6]



FUTURE SCOPE

The following are the further developments that can be done based on the project.

- Improve in paralyzed hand.
- Wireless connectivity using Bluetooth-and-Wi-Fi.

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