SEIZURE PREDICTION DEVICE

User Manual
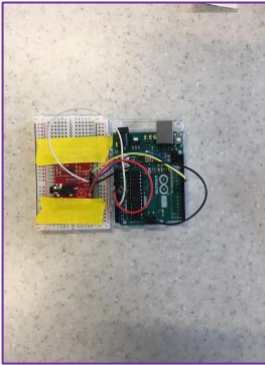
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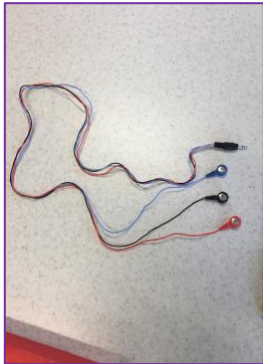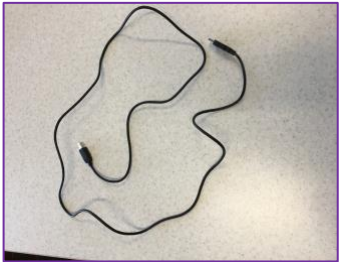
Components of the Device

Computer

Arduino

Electrode pad

Electrode wiring

USB cable

Cautionary Notes

- This device is only meant to be worn while the patient is sleeping.
- If you have a cardiac pacemaker, please consult your physician before using this device.
- The computer must remain connected to a power source for the entire duration of use.
- Ensure that the volume on your computer is turned up so that you can hear any alerts that may occur.
- Check the settings on your computer to ensure that your computer will not go to sleep due to inactivity.

Before Use

Step 1: Turn on your computer. Make sure you are connected to the internet and that the computer is connected to a power source.

Step 2: Use the USB cable to connect to the computer as shown in Figure 1:

Figure 1

Step 3: Use the other end of the USB cable to connect to the Arduino as shown in Figure 2:

Figure 2

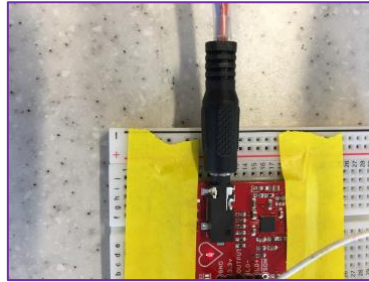Step 4: Connect the electrode wiring to the Arduino as shown in Figure 3:

Figure 3

Step 5: Snap the metal portion of the electrode pads into ends of the electrode wiring as shown in Figure 4:
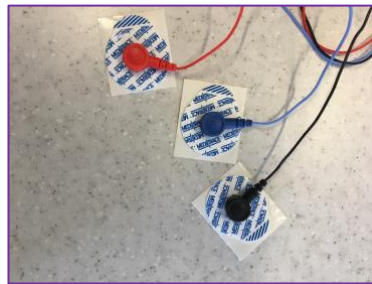

Figure 4

Step 6: Install the latest version of MATLAB. Please visit the following link: https://www.mathworks.com.

Step 7: Install the latest version of Arduino. Please visit the following link: https://www.arduino.cc/en/Main/Software

Step 8: Install the MATLAB Support Package for Arduino Hardware. To do so please visit the following link: https://www.mathworks.com/matlabcentral/fileexchange/47522-matlab-support-package-for-arduino-hardware.

Step 9: Remove the white slip from the back of the electrode pads and attach the sticky sides of the electrode pads onto skin according to Figure 5.
   a. Place the red electrode on the right, lower side of the stomach.
   b. Place the black electrode on the right side of the chest.
   c. Place the blue electrode on the left side of the chest.
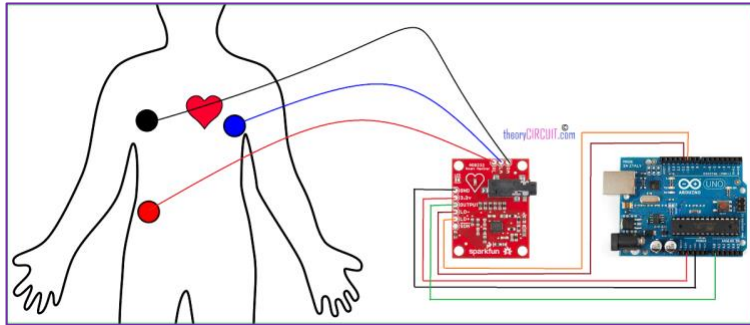

Figure 5

Step 10: Initialize MATLAB.

Step 11: Plug the Arduino into computer with the given USB cable.

Step 12: Download the zip file titled: "Predict" using the following link:
http://teamsudep.weebly.com/software-download.html

Step 13: Within the zip file, open the script titled "predictSeizures.m".
Step 14: Press the "Run" button, located at the top center of the screen as shown in Figure 6:

Figure 6:
The "run"
button

Step 15: If you receive the following message, click "Add to path" (see Figure 7 below). If not, please disregard this step.
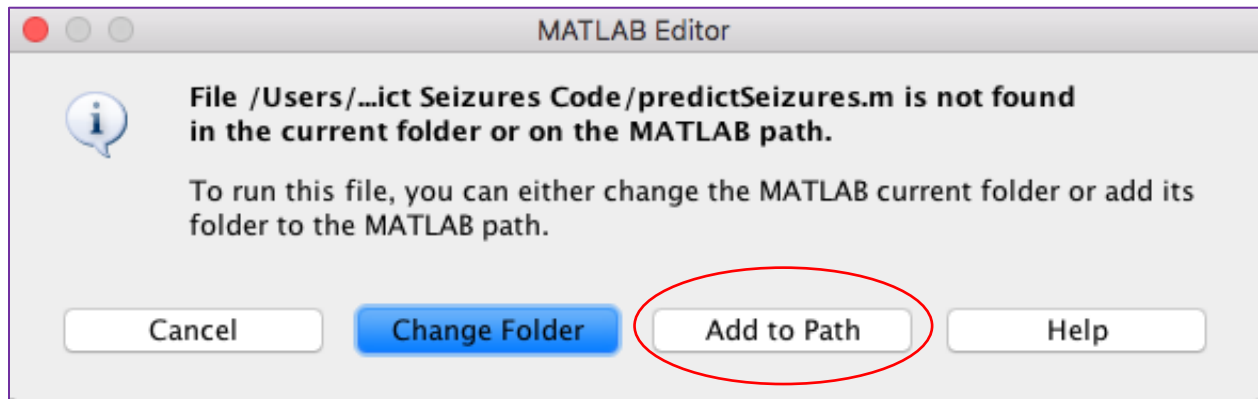

Figure 7

Step 16: Go to sleep.

After Use

Step 1: End the MATLAB script by pressing Ctrl+C (if using a PC) or Command+C (if using a Mac)

Step 2: Remove electrodes from body.

Step 3: Discard the white pad of each of the three electrodes and replace them with new ones.