Using OpenBCI from scratch

Quote Terence Mayne:

" First we need the OpenBCI GUI from: http://openbci.com/index.php/downloads

Which uses the Processing platform

https://processing.org/download/?processing

OpenBCI works on the older version of processing 2.21 and not 3.

This GUI will enable you to get the port to be used in the Python code and check

the hardware is working. If it's not being picked up you may need a new FTDI

driver, http://www.ftdichip.com/Drivers/VCP.htm (I had to install this on my

mac).

The python code pulls in the raw EEG from the device, and opens a Lab Streaming

Layer (LSL) Outlet which it broadcasts.

In the python code, the main program is openBCI\_LSL\_streamer.py

The port has to be configured.. something like...

port = '/dev/tty.usbserial-DB00JDI3'

The number after tty. is likely to be different, but remained constant

after that on my machine.

The main class it relies on is "open\_bci\_v\_ganglion.pyc" which has been tweaked a

bit to use LSL.

Also the python LSL library has been added which is in the path /lib

There are other dependencies which may need to be installed see the

requirements.txt file.

The MATLAB code opens a LSL inlet which pulls the EEG into MATLAB and outputs it.

Currently it picks up the first inlet it finds (but this can easily be changed to

look for the OpenBCI stream). A MATLAB version of LSL will probably need to be

installed.

https://code.google.com/p/labstreaminglayer/source/browse/LSL/liblsl-Matlab/?r=c6e9924352bc3b278cdf5c65c537a232cd71a02b

<https://code.google.com/p/labstreaminglayer/source/browse/LSL/liblsl-Matlab/?r=c6e9924352bc3b278cdf5c65c537a232cd71a02b>

Other things to note:

I find the battery can get flat after a couple hours use, and even though the LED

is showing, it still need be charged for the computer to detect it.

The bluetooth setting on the BCI I use is 'PC', I've briefly tried the

'bluetooth' option without the dongle which didn't work.

The BCI sometimes isn't picked up, in which case I switch the BCI off, unplug and

replug the USB bluetooth, and switch it on again, after which it works well.

The Processing GUI needs to be stopped for the python MATLAB LSL streams to work. "

The above extraction is all done with python.

OpenBCIParser and OpenBCISerial are c++ files that do the same job but work better

with the QtGui and c files.

Step by step to get this displaying:

- Put the usb dongle into a usb port on GPIO\_6 setting

- Find the usb port to be used through the same process as above \*

- Replace the MODEMDEVICE variable in openBCIHS and openBCISerial with this port

- "make" the project

- Turn the headset onto PC mode

- Run the display with ./build/eeg-gui

- put the clips on your ears and sensors on your head, adjust speed/filters/num of channels

\*On the pi, if you put the usb dongle in the top right slot then you shouldn’t have to adjust the MODEMDEVICE, otherwise try the other usb slots, one of them should be /dev/ttyUSB0

When I compiled the project, I had to delete a couple .o files that the compiler said were incompatible, and recompile, it worked perfectly on the pi after that.