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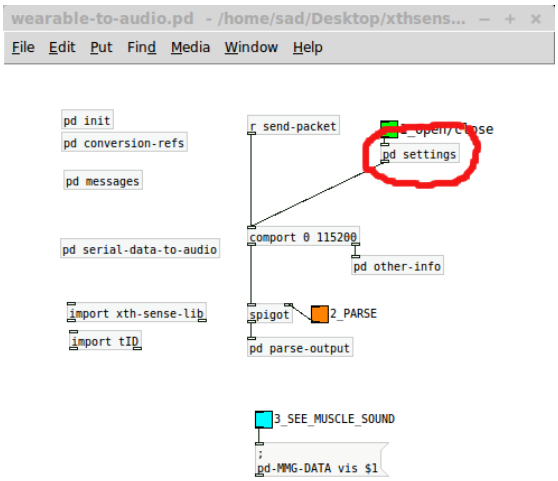
Hardware / Software setup

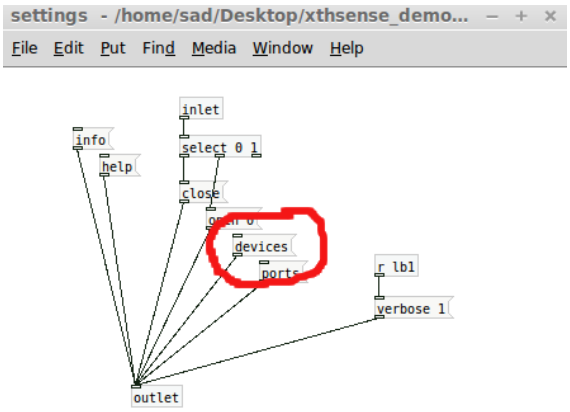
1. connect receiver (i.e. the smaller board) to the usb port of your laptop using a USB to micro USB cable
2. check the receiver's port by typing in the terminal:
   cat /dev/ttyACM* and then press tab.
3. look in the output of the terminal for a port named ttyACM0, or ttyACM1 etc..
4. you should see only one port ttyACM, take note of that port.
5. switch on the transmitter (push the button in the center of the larger board). The LED goes orange
6. launch the python script by typing in the terminal:
   python the-path-to-the-script/serial_comm3_wireless_osc.py
7. as soon as you launch the script, the two red LEDs on the receiver will flash a few times, then one of the two LED will start flashing continuosly
8. When the LED is flashing continuosly that means the wearable is ready and communication between the wearable and the computer is ok.

Open Pd and connect it to the wearable

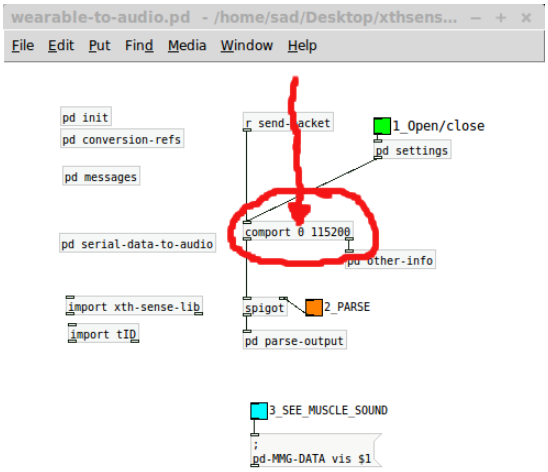
1. launch Pd-extended
2. turn on the sound engine by clicking on Media => DSP On
3. open the Pd patch "wearable-to-serial.pd"
4. when the patch opens, click on the object "pd settings" to open it.



5. when it opens, click on the message "devices"



6. look in the console window. Pd will tell you which ports are available, then:
    1. if the available port is 0, you're good
    2. if the available port is different than 0, you need to change the port parameter in the patch. To change the port parameter:
        1. go back to the main patch "wearable-to-serial.pd".
        2. Find the object "comport 0 115200", change the 0 to the number of the port that Pd told you was available
        3. Save the patch (cmd + s)



Start the patch to receive data and convert them to sound

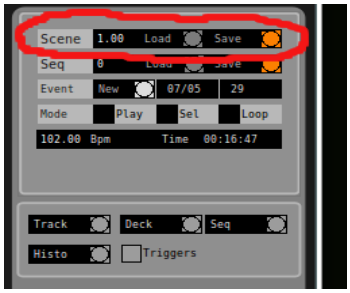
In the patch you are working on now, i.e. "wearable-to-serial.pd", you will see three toggles: one is green, another is orange and the last one is blue.
To get started, click the toggles in this order:
1_OPEN/CLOSE (opens the serial communication)
2_PARSE (parses the data into sound)
3_SEE MUSCLE SOUNDS (opens a patch to see a trace of the muscle sounds as you move.)

Start and use the musical demo patch

The demo consists of playing a groovy virtual piano using the sounds from your muscle. The piano is sensitive to the changes in the force of your muscle. Lower force = lower notes. Higher force = higher notes. In the same way you can control also reverberation effect, and the instrument also replies to your play by playing more notes to you.

Leave the previous Pd patch open. Then:

1. launch the Pd patch "Xth-Sense_groovypiano_demo.pd"
2. click the black rectangle where you see: 0.00. Then type 1, press Enter, and click the Load grey circle (this loads the first part of the demo)
3. move and you should hear **piano notes**

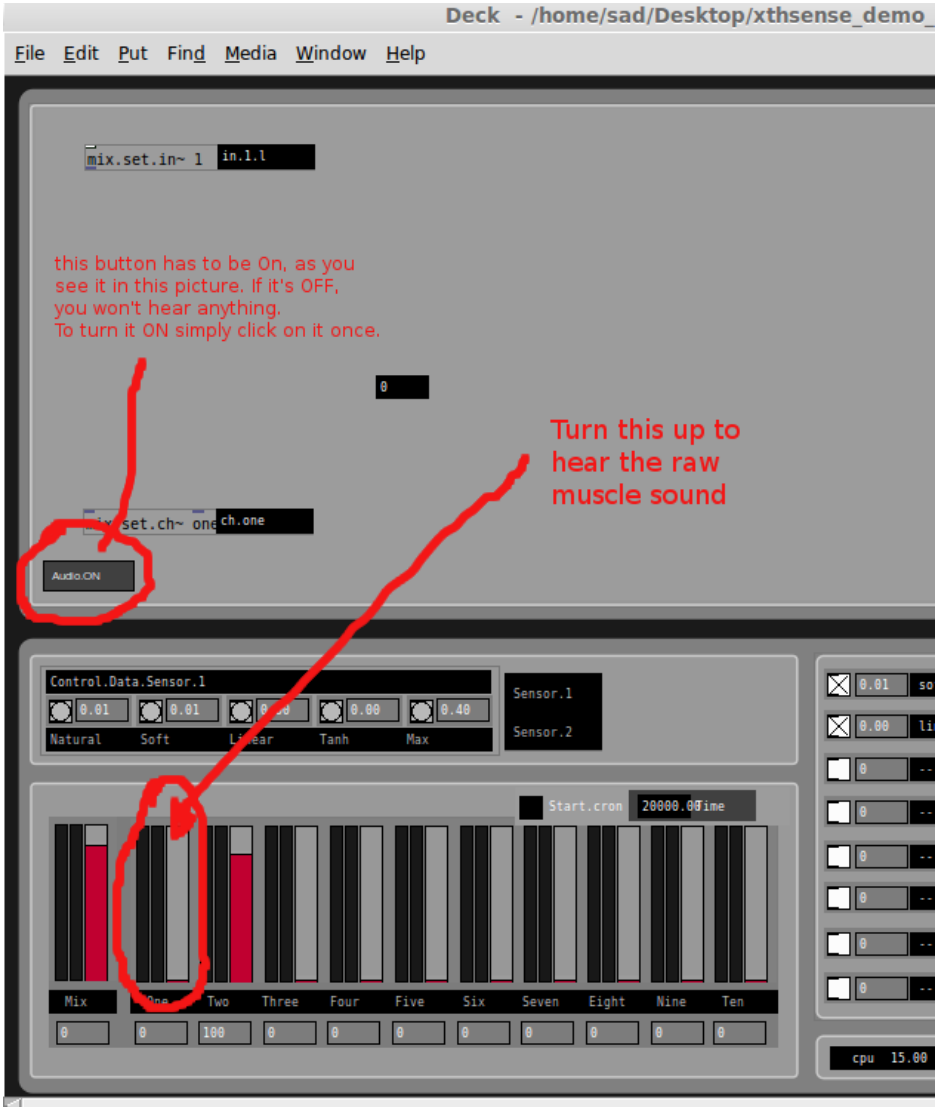


4. click the black rectangle where you see: 1.00. Then type 2, press Enter, and click the Load grey circle (this loads the second part of the demo)
5. move and you should hear **piano notes + reverberation effect**

6. click the black rectangle where you see: 2.00. Then type 3, press Enter, and click the Load grey circle (this loads the third and last part of the demo)
7. move and you should hear **piano notes + reverberation effect + the instrument replies to your gesture with new piano notes**

The gesture to sound interaction works as follows:
Throughout all the Scenes, every contraction of your muscles triggers a few piano notes.
In Scene 1, the more energy in your muscle contraction, the higher the pitch of the notes.
In Scene 2, the same as in Scene 1, plus, the increase in energy increases also the reverberation effect.
In Scene 3, you get all of the above, plus, when you're still, the instrument replies to you by playing more notes.

You can also hear the raw sound of the muscles or heartbeat (if you put the sensor close to your heart on the skin). To hear the raw sound turn up the red fader labelled "One", which is located in the mixer at the bottom of this patch. See image below:


Deck - /home/sad/Desktop/xthsense_demo_
File Edit Put Find Media Window Help
mix.set.in~ 1
in.1.l
this button has to be On, as you
see it in this picture. If it's OFF,
you won't hear anything.
To turn it ON simply click on it once.
0
Turn this up to
hear the raw
muscle sound
ch.one
Audio.ON
Control.Data.Sensor.1
0.01
0.01
0.00
0.40
Natural
Soft
Tanh
Max
Sensor.1
Sensor.2
Start.cron
Mix
Two
Three
Four
Five
Six
Seven
Eight
Nine
Ten
100
cpu 15.00