Shaking Table Documentation

**Components –**

* Table/ box with shelf several inches below the top plane: Mounted on the shelf are the roller support (marbles in embroidery hoop), driving motor and wheels, Arduino microcontroller and breadboard circuit (see circuit\_diagram.pdf)
* Plexiglass tabletop: Front and back are lined with conductive material to enable the feedback control for shaking. The front (closer) end has one blue and one red wire attached to the corners; the blue wire should connect to analog pin 2 on the Arduino while the red wire should connect to the positive (5V) rail on the breadboard. Similarly for the back (farther) edge, the blue lead connects to analog pin 1 on the Arduino and the red wire connects to the positive rail.
* 9V battery: connects via adapter to the red and black leads on the breadboard (see circuit\_diagram.pdf)

**Setup –**

1. Ensure that all the components are present and that the breadboard is fully connected. The roller support should contain enough marbles that the tabletop is well-balanced, but few enough that they can still roll around.
2. Connect the 9V battery through its adapter to the breadboard. The 9V battery should be disconnected when the table is not in use.
3. Connect the Arduino to a computer with a USB cable. On a Macbook the cable should connect to USB port “/dev/tty.usbmodem1421”.
4. The Arduino should already be programmed with the sketch two\_motor\_control\_py.ino. If this is not the case, load the sketch from the Arduino GUI.
5. Connect two heart rate monitors to the computer. On the Macbook this should be done with a USB splitter on port “/dev/tty.usbmodem1411”; the two devices will show up on ports “/dev/tty.usbmodem1d1111” and “/dev/tty.usbmodem1d1121”.
6. Both heart rate monitors should already be loaded with the sketch hrm\_wavelet\_clean\_v03.ino. If this is not the case, load both with the sketch.

\*Note: hrm\_wavelet\_clean\_v04 does the same thing with a slightly different algorithm. It’s not clear if one is significantly better than the other.

1. Run the table\_interface program from the command line or as an application.