PROJECT SUMMARY

B.O.I.N.G.

BODY ORIENTED INTERFACE ‘N GYMNASTICS

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MAY 2010

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Interface Description

BOING, the Body Oriented Interface ‘n Gymnastics Instrument, is a musical trampoline that combines aerobics with musicianship. We have built a sensor framework onto the trampoline using stretch sensors, wires, resistors, & the Arduino micro-controller. One end of the sensor is connected to the pad. The other is attached to the frame using an insulated connection. One sensor is installed onto each of the trampoline’s four quadrants. Each sensor is wired to an individual pull-down circuit connected to the Arduino board. As the surface of the pad is depressed the stretch sensors will extend resulting in a current change. The Arduino scales and limits this data before sending to the laptop as serial data via a USB A/B cable.

Processing receives the serial and converts it into MIDI information. Processing filters the data to only send information when there is a significant change in the surface of the trampoline’s pad. The MIDI data is received from Processing by Isadora which routes the MIDI to specific channels in Ableton Live. Isadora applies additional filters, and changes the routing patch to create musical sections. In Ableton, the data is filtered into different channels which are then assigned to unique custom synthesizers in Reaktor.

The Greeks believed that the perfect education involved the correct synthesis of musical skill and gymnastic ability. Now that the BOING has been created, new emergent possibilities in musical and aerobic applications can be realized for attaining the ideal learning experience. Education starts at a young age, and it is important to use the right tools to develop and guide our youths minds and bodies in a progressive and productive fashion. BOING renders this ideal possible by integrating the intellectual interest of harmonious music with a full body work out synthesized into one interface to inspire our spirits to reach for greater heights.

In redesigning the BOING, we would to upgrade to a larger trampoline with longer stretch sensors for more expressive results. The use of a wireless hand controller to shift through different Patches would also be employed for maximum control & enjoyment in the future of BOING development.

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Parts List

Line	Item	Vendor	Part #	Qty	Unit	Each $$	Tot $$
1	36" Mini Trampoline	Walmart	--	1	ea	$ 33.00	$ 33.00
2	Arduino Duemilanove	Spark Fun Elec.	--	1	ea	$ 27.00	$ 27.00
3	Duemilanove Screw Shield	Adafruit Industries	--	1	ea	$ 10.00	$ 10.00
4	Stretch Sensor	Images Scientific Instrum	--	20	inch	$ 1.50	$ 30.00
5	1" Anti-Vibration Pipe Clamp	McMaster Carr	2515T14	6	ea	$ 1.51	$ 9.06
6	Plastic Box 7.5"x4.3"x2.25"	Pacific Radio Supply	HAM-1591ESBK	1	ea	$ 7.69	$ 7.69
7	Hook Up Wire (22ga)	Various	--	24	ft	$ 0.27	$ 6.59
8	#8 Ring Terminals	Various	--	50	pkg	$ 2.50	$ 2.50
9	Perf Board 1.5"x1.75"	All Electronics	PC-1	1	ea	$ 0.75	$ 0.75
10	3 Position PCB Terminal-90°	All Electronics	TER-303	2	ea	$ 0.35	$ 0.70
11	2 Position PCB Terminal-90°	All Electronics	TER-302	2	ea	$ 0.25	$ 0.50
12	3 Position PCB Terminal	All Electronics	TER-203	1	ea	$ 0.60	$ 0.60
13	2 Position PCB Terminal	All Electronics	--	1	ea	$ 0.40	$ 0.40
14	3/8"-16 x 1" Bolt	Various	--	6	ea	$ 0.05	$ 0.30
15	#6 x .5" Screw	Various	--	4	ea	$ 0.10	$ 0.40
16	USB Adapter-Fem A to Male B	Pacific Radio Supply	NEU-NAUSB-B	1	ea	$ 5.79	$ 5.79
17	2' USB A/B Cable	Various	--	1	ea	$ 3.00	$ 3.00
18	6' USB A/B Cable	Various	--	1	ea	$ 7.00	$ 7.00
19	1" Velcro	Various	--	2	inch	$ 0.25	$ 0.50
20	Scrap MDF	Various	--	1	ea	$ -	$ -
21	Mini Strain Relief	All Electronics	--	2	ea	$ 0.10	$ 0.20
					Total Cost		$ 145.98

This is a comprehensive parts list for our interface.
Where applicable, supplier information for generally available parts is not listed.
While the stretch sensor material was relatively inexpensive the shipping and handling costs were significant.

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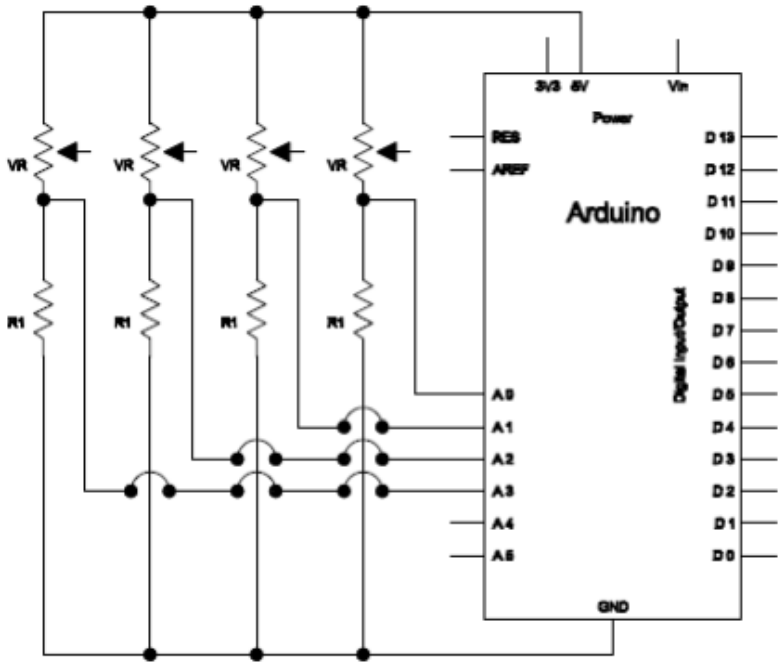
Circuit Schematic



PARTS	
R1	1.8K Ohm
VR	Stretch Sensor

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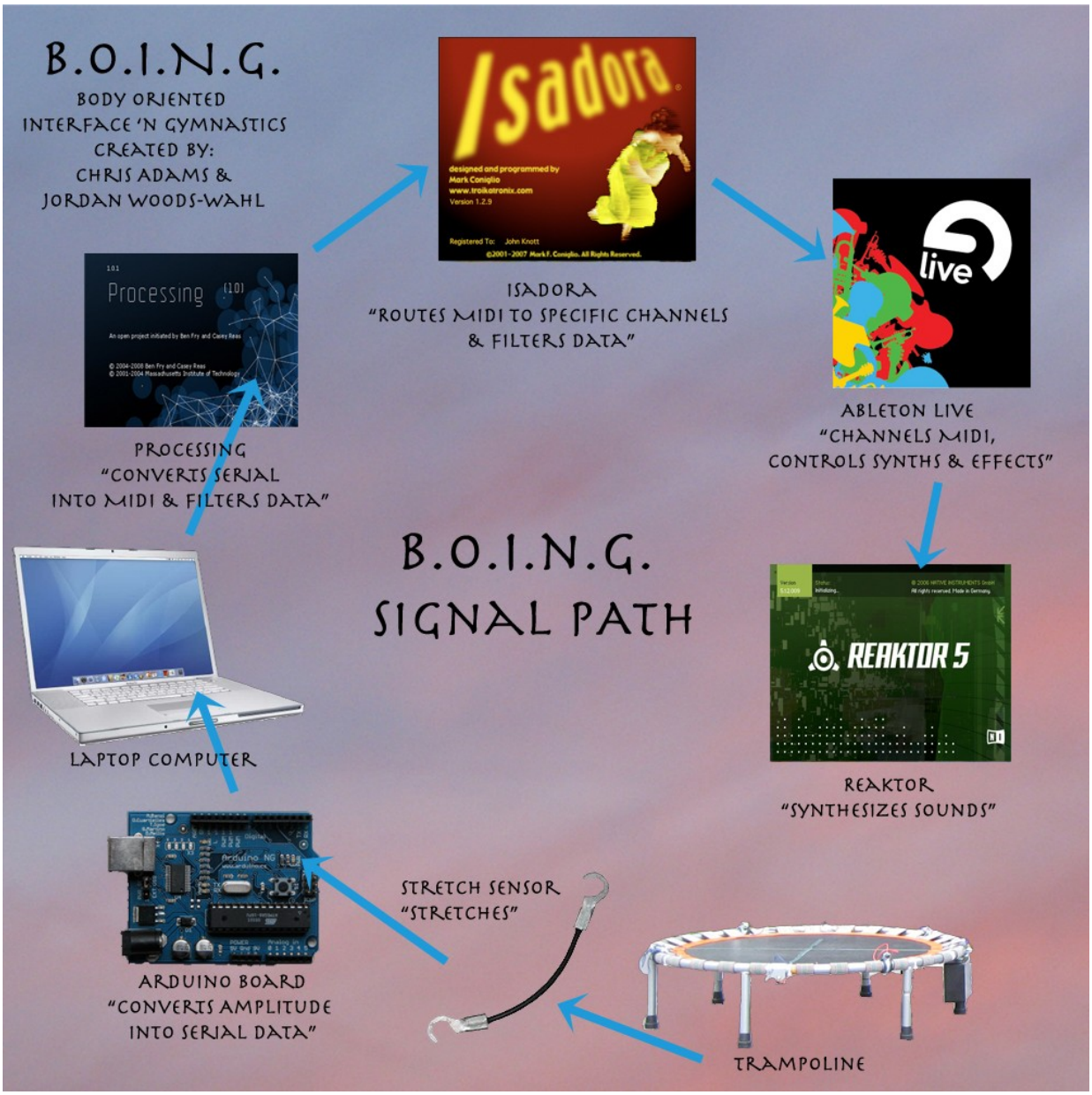
Signal Path



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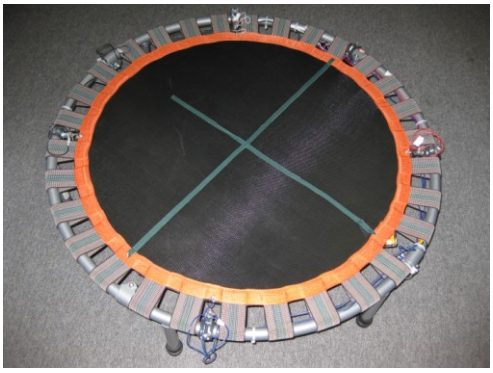
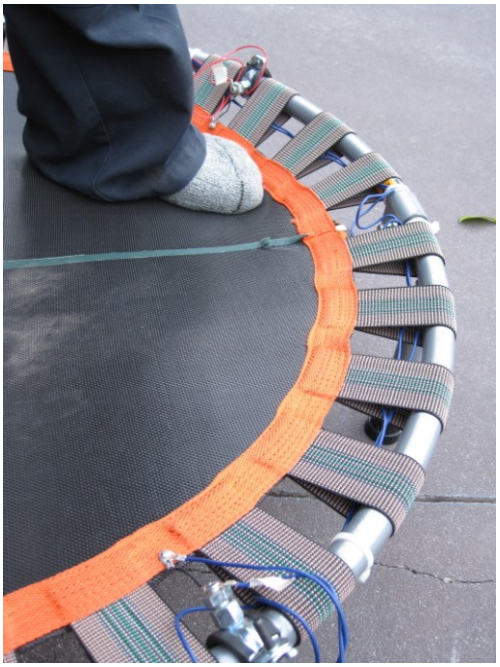
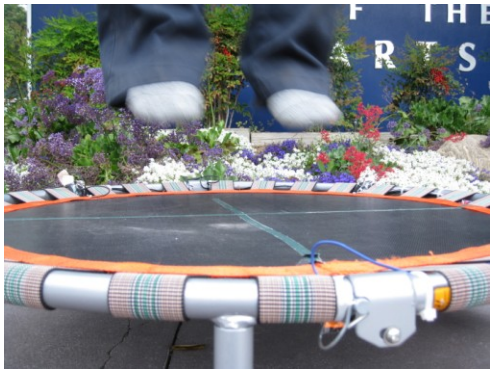
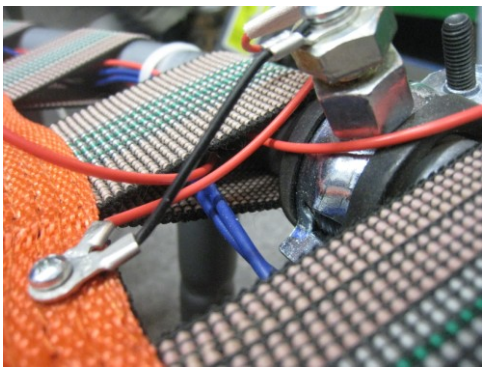
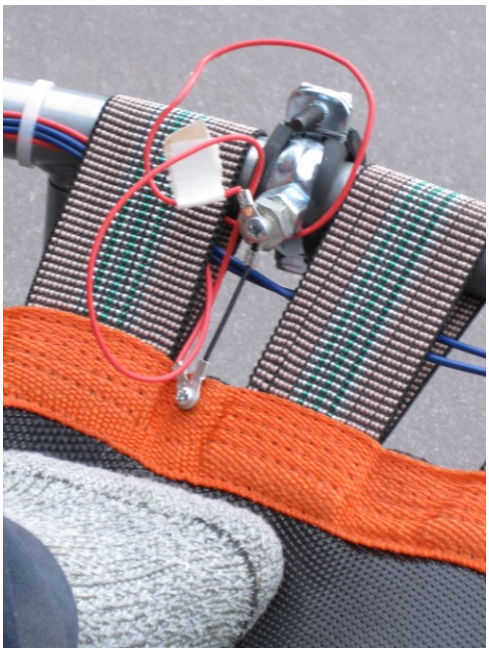
Finished Pictures











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