

PELVIC FLOOR BIOFEEDBACK DESIGN

Client: Dr. Patrick McKenna, UW Urology Department

Advisor: Dr. Amit Nimunkar

Team: Sam Lines (Leader)

Michael Simonson (Communicator)

Shawn Patel (BWIG)

Andrew Vamos (BSAC&BPAG)

Date: 10/27/2014-10/31/2014

Problem Statement

Pelvic floor muscle biofeedback systems have been used to educate and train people how to correctly control the process of urination in children and elderly patients. As devices slowly fail or get outdated, a new device and interface system that can be used in conjunction with videogame like training programs is desired. With the completion of a basic EMG biofeedback system, our goal is to continue to improve the functionality of the software while simultaneously designing hardware with commercial standards in mind. This product will be designed and tested so that use in a hospital will be safe for both the hospital staff and the patients.

Last Week's Goals

- We have ordered the parts, so we will use the time for their delivery to finish the PCB and order that
- Begin working on the Arduino software to prepare to completion of the EMG circuit
- This software update will mainly consist of programmable gain control to help make the system more universal in patient treatment.

Summary of Team Role Accomplishments

- Leader (Sam): Began work on the PCB schematic
- Communicator (Michael): Continued IRB work and started to work on lead fall off detection
- BWIG (Shawn): Implemented GitHub and started work on the gain control
- BPAG And BSAC(Andrew): Started working on microcontroller code formatting

Summary of Design Accomplishments

- We have started to work on the PCB schematic and will have a first version finished early next week
- We forgot to order a few parts on our last order so we remade a list and will get that submitted as soon as we confirm we will have everything that we need.
- We will be meeting with Tina tomorrow to go over the IRB submission.

Project Difficulties

- There have been some problems getting consistent power from the microcontroller so we will have to make our own USB port
- We have decided to incorporate lead fall off detection and controllable gain, so we will have to do some reading on how that can be coded into the Arduino.

This Week's Goals

- Order the second set of parts that we forgot to order last time
- Finish the PCB and order that with the next parts
- Finish a testing protocol so that we can test the device as soon as it is made.

Activities














Person(s)	Task	Time (hrs)	Week Total	Semester Total
Sam	PCB work	2	3	25
	Team meeting	1		
Michael	Lead fall off detection	2	3	26
	Team meeting	1		
Shawn	Controllable gain	2	3	25
	Team meeting	1		
Andrew	Microcontroller coding work	2	3	25
	Team meeting	1		

Timetable

- Due to the large size of our timeline, I will attach the full excel spreadsheet

Expenses

- After buying the parts, the current expense of the project is \$41.22. A picture of the total expenses incurred is posted below.

Index	Quantity	Image	Part Number	Description	Customer Reference	Available Quantity	Backorder Quantity	Unit Price	Extended Price
<input checked="" type="checkbox"/> 1	<input type="text" value="2"/>		DCP010505DBP-ND	IC REG ISOLATED +/-5V 0.1A 7DIP	<input type="text"/>	2 Immediate	0	8.69000	\$17.38
<input checked="" type="checkbox"/> 2	<input type="text" value="8"/>		RMCF0805FT51K0CT-ND	RES 51K OHM 1/8W 1% 0805	<input type="text"/>	8 Immediate	0	0.10000	\$0.80
<input checked="" type="checkbox"/> 3	<input type="text" value="8"/>		P9.09KCCT-ND	RES 9.09K OHM 1/8W 1% 0805 SMD	<input type="text"/>	8 Immediate	0	0.10000	\$0.80
<input checked="" type="checkbox"/> 4	<input type="text" value="16"/>		RMCF0805FT20K0CT-ND	RES 20K OHM 1/8W 1% 0805	<input type="text"/>	16 Immediate	0	0.02900	\$0.46
<input checked="" type="checkbox"/> 5	<input type="text" value="16"/>		P180KCCT-ND	RES 180K OHM 1/8W 1% 0805 SMD	<input type="text"/>	16 Immediate	0	0.10000	\$1.60
<input checked="" type="checkbox"/> 6	<input type="text" value="8"/>		490-8288-1-ND	CAP CER 4700PF 50V 1% NP0 0805	<input type="text"/>	8 Immediate	0	0.43000	\$3.44
<input checked="" type="checkbox"/> 7	<input type="text" value="8"/>		490-8309-1-ND	CAP CER 0.043UF 50V 5% U2J 0805	<input type="text"/>	8 Immediate	0	0.45000	\$3.60
<input checked="" type="checkbox"/> 8	<input type="text" value="16"/>		399-7342-1-ND	CAP CER 1UF 16V 5% X7R 0805	<input type="text"/>	16 Immediate	0	0.28300	\$4.53
<input checked="" type="checkbox"/> 9	<input type="text" value="8"/>		311-43.0KCRCCT-ND	RES 43K OHM 1/8W 1% 0805 SMD	<input type="text"/>	8 Immediate	0	0.10000	\$0.80
<input checked="" type="checkbox"/> 10	<input type="text" value="4"/>		S7050-ND	CONN HEADER FEMALE 17POS .1" GOLD	<input type="text"/>	4 Immediate	0	1.35000	\$5.40
<input checked="" type="checkbox"/> 11	<input type="text" value="4"/>		CR0805-FX-6201ELECT-ND	RES 6.2K OHM 1/8W 1% 0805 SMD	<input type="text"/>	4 Immediate	0	0.10000	\$0.40
<input checked="" type="checkbox"/> 12	<input type="text" value="56"/>		P10.0KCCT-ND	RES 10K OHM 1/8W 1% 0805 SMD	<input type="text"/>	56 Immediate	0	0.02880	\$1.61
<input checked="" type="checkbox"/> 13	<input type="text" value="4"/>		P68.0KCCT-ND	RES 68K OHM 1/8W 1% 0805 SMD	<input type="text"/>	4 Immediate	0	0.10000	\$0.40
								Subtotal	\$41.22
								Shipping	Estimate
								Sales Tax	unknown