

Senior Design 491 - Weekly Report - DEC15-04 Fall 2015 Week 10/04 - 11/01 (Month of October)

Advisor: Suraj Kothari
Project: Future Wearables
Client: Ted Krepos (*"Krepos Physical Therapy and Performance"*)
Ensoft - Jeremías Saucedá
Members: Aaron Reyes - Team Leader
Nick Plutt - Webmaster
William Park - Communication Leader
Josh Cline - Key Concept Holder #1
Nick Gonner - Key Concept Holder #2

Monthly Recap:

As we are midway through the semester. For the month of October, we had to assemble more prototypes to demo to our clients Ted and Jeremias. This month hardware focused on moving from the Maple Microcontroller back to ProMicro. We also had to figure out how we will be incorporating all of the devices onto that microcontroller.

Software's main focus was to further improve the application to satisfy the requirements that was given to us by Ted and Jeremias. During this month, the application was changed drastically so that it was actually usable in demos and presentations.

We met with Ted on October 15 to demo our second prototype and our progress with the project. We also received feedback and input as to when we will meet next and what goals and changes needed to be made until our next meeting in November.

Meeting Overview:

October 11 2015 - **Meeting-26**

Duration: 5.0 Hours

Attendance - **26**

| | |
|--------------|---------|
| William Park | Present |
| Nick Plutt | Present |
| Aaron Reyes | Present |
| Josh Cline | Present |
| Nick Gonner | Present |

1. This meeting was in preparation for our meeting with Ted.

Hardware

1. The majority of this meeting was to work with the hardware to ensure that the data we were receiving was sufficient for the meeting with Ted.
2. A lot of testing was done on the EMG side due to the new use of conductive fabric.
 - a. Test were done to see if the conductive fabric actually helped in changing the data that the EMG sensor was providing.
 - b. Placement locations of the conductive fabric was guessed based on the relative locations of the specific back muscles.

Software

1. At this point, the bluetooth data was properly showing up on the phone.
 - a. The only things that were connected at that point was one EMG as well as one IMU.
 - b. All that data was sent in real time to and displayed on the phone in text format.

Meeting Overview:

October 15 2015 - **Meeting-27**

Duration: 2.0 Hours

Attendance - 27

| | |
|--------------|---------|
| William Park | Present |
| Nick Plutt | Present |
| Aaron Reyes | Present |
| Josh Cline | Present |
| Nick Gonner | Present |

This meeting was the second prototype test that we had with Ted. Mainly we were able to show him how the EMG works with the conductive fabric as well as the first presentation of the software application.

We interpreted the data and gave us feedback on ways we can change how the data is being shown. He also showed us exact placements of the back muscles so that the conductive fabric can be placed in the proper locations.

For the application side, we talked about the possibilities and scope of what he wanted. The real time data was a good start, but that was all that was available at that time. The graphing portion of the application was not set up and implemented during this run of the project.

At the end of this meeting, Ted presented us with a "Back posture compression shirt". He said that by using this shirt, it could help with the placement of the device as well as help secure the conductive fabric in place. (We were using ace wraps to hold the emg together.

After this meeting with Ted, we discussed as a team as well as created deadlines for the fixes and changes that needed to be made for the next meeting with Ted and Jeremias that was planned for next month.

Accomplishments this month:

1. Outline and Goals for the upcoming month
2. Bluetooth functionality works
3. EMG data was adjusted and now is readable
4. Conductive Fabric was tested
5. ProMicro controller was selected as the final microcontroller

Pending Issues:

1. Application needs more functionality
 - i. Parsing and cleaning up the bluetooth data
 - ii. Graphing Application needs to be implemented
 - iii. SQLite database was in the work for holding all the information
2. Software Application still has some bugs causing the application to crash.
Testing needs to be done to narrow and pinpoint the errors that are causing the crashes
3. PCB and Battery solution for the hardware team (continued)
4. Not all components of the Hardware was implemented.

Planning:

- i. Getting the design for the PCB finished.
- ii. Assembling the Third prototype. (Working with compression shirts)

- iii. Software Team needs to continue to push activities for the application (Graphing, database)
- iv. Conductive fabric testing with a compression shirt
- v. Finish Graphing functionality for Software Application
- vi. Working in designing a layout for the compression shirt.

Individual Contributions

Aaron : -- (15.5hr)

- i. meetings
- ii. Working on battery Solution
- iii. Working on solution to limit voltage from EMG to microController

William: -- (17 hr)

- i. Weekly Report
- ii. Meetings
- iii. Bluetooth connectivity and Application coding

Josh: -- (17 hr)

- i. Meetings
- ii. Create conductive fabric strips with snaps
- iii. Testing conductive fabric
- iv. Working on Android application

Nick P. -- (18 hrs)

- i. Meetings
- ii. Android Graph API

Nick G. -- (18 hr)

- i. Meeting
- ii. Testing bluetooth code
- iii. Rewriting I2C Code
- iv. Soldering components around in hardware and testing

Total Contribution for the Project:

Aaron Reyes (71.7 hrs)

William Park (77 hrs)

Josh Cline (99.2 hrs)

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Nick Plutt (84 hrs)

Nick Gonner(82.1 hrs)