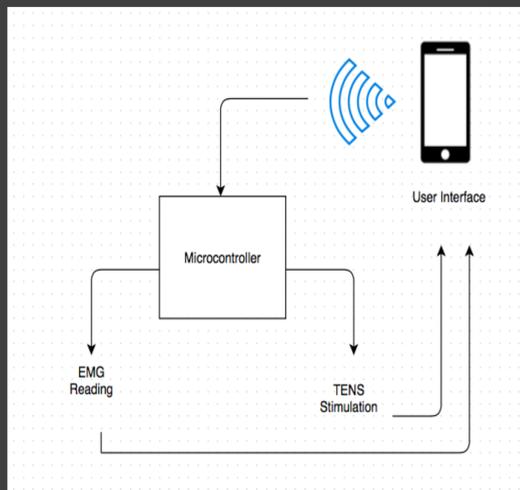


Goal

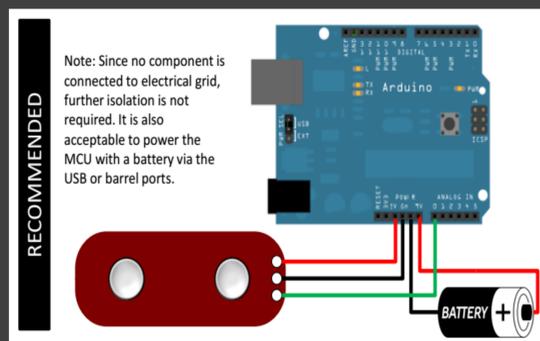
- Remeo is technology that reads you. Through the use of Electromyography and our mobile application, Remeo provides the user with real time analysis of a particular muscle group by measuring the associated electrical signals. Remeo is user friendly and most importantly an inexpensive EMG device for athletes and medical practitioners alike.

Objectives



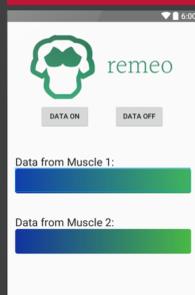
- Device will be a combination of an athletic sleeve with housing capabilities for a microcontroller.
- The purpose of our project is to be able to measure full muscle activity during exercise. For future development we would like to stimulate the muscle via a tens unit.

Design Approach



- Conductive Fabric, Athletic Sleeve, Myoware Sensor, Arduino Board, Bluetooth for wireless control

User Interface



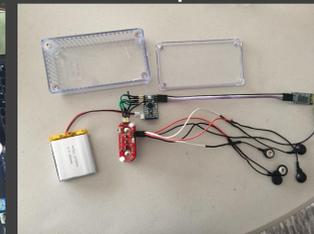
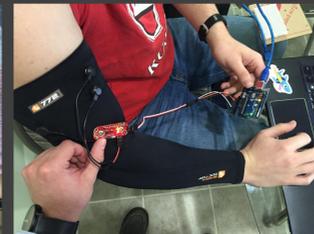
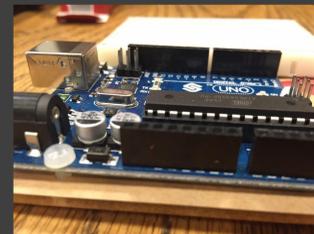
- Remeo's user interface is an Android Application.
- The User is originally prompted with a list of available Bluetooth devices.
- Progress bars display the EMG activity of corresponding muscles.

Software

- The software that support's Remeo resides on both Android and Arduino. The Arduino software is written in C and is responsible in controlling the control and communication to the Android Application.
- The Android application is written using Android Studio in the Java programming language, and it utilizes Bluetooth communication and threading to receive and communicate EMG data to users in a user friendly fashion.

Results

- PHASE I: STOCK SET UP
 - Stock set up serial monitor displays minimum values of around 70-90 units when muscle is not flexed, and 985-986 units at flexion
- PHASE II: ARMBAND WITH NEW ELECTRODE
 - Erratic and unpredictable results; serial monitor did not display results similar to that of our stock set up
 - low value when the muscle was fully flexed, sometimes we saw a delayed rise that would remain after flexion
 - felt heat between the button snaps
 - Variables for phase: soldered connection and dry fabric electrode
- PHASE III
 - Determined variables for each phase and for this particular one we eliminated one of them to troubleshoot
 - Variables from phase were: soldered connection and gel electrodes
 - Serial monitor displayed similar results to that of our stock set up
- PHASE IV & V
 - Successful phases; included once again our previous variable from phase II however this time our fabric was wet
 - Serial monitor displayed similar results to that of our stock set up



Acknowledgements

We would like to extend a thank you to our advisor Dr. Mehdi Javanmard, Capstone Director Professor Hana Godrich, and Siemens for providing us with additional funding to further develop our device

References

- [1] Rash, Gregory, "Electromyography Fundamentals" Rash, GS. (2002). Gait and Clinical Movement Analysis, Society. Disponível em:<www.gcmas.org>. FURTHER REFERENCES LISTED ON REPORT