CONCUSSION DETECTING HELMET

END OF PHASE 4 REVIEW

Maxwell Reitz, Joshua Metzger, Brittany Lacy, Robert Frumusa, James Cummings, Isaac Garland

Project Description

Our project aims to create a device to detect concussions during a sporting event. We will do this by not only detecting impacts with an accelerometer, but also recording and comparing previous impacts to better predict when a player receives a concussion. Ultimately, we want our device to be easily incorporated into a helmet without a loss in safety.

Phase 4 Work Completed

Software

- Continue Communication Between Sensor and Phone
  - Set-up Threads for Bluetooth Connection
  - Research Methods of Storing Data
    - Found sqlite3 database and started implementing the database on the raspberry pi.
  - Set-up Heartbeat Packets on Sensor and Detection of Raspberry Pi
- Stress tested Raspberry pi's Ethernet interface
- Started Stress testing Amazon database with current hardware configuration.
- Android Application to Modify and Access Data
  - Issues with Amazon Database - New Research and Planning Required, Set Back Schedule
- Test Methods to Display Data on Phone

Electrical

- Research PCB Design
- Draft of PCB Layout
  - Routing and Part Placement Must be Optimized to Reduce Size

Mechanical

- Brainstormed Locations on Two Helmets
  - Ability to Survive Basic Shock Tests Will Determine Final Locations During MSDII
- Helmet CAD Drawing

- Test Plans

To Do:

End of Semester:

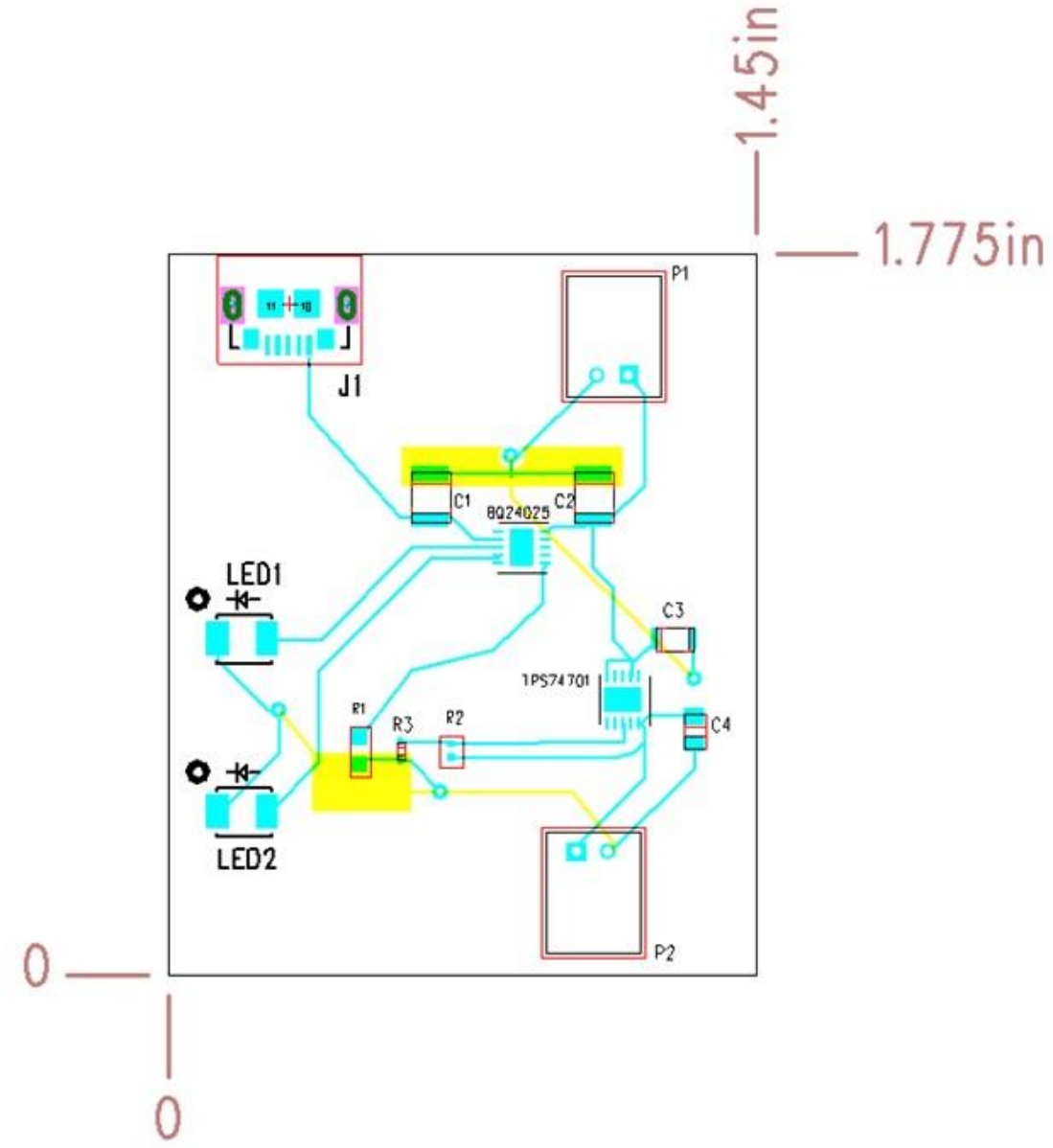
- PCB Optimization
- PCB Trace Sizing
- Order Parts
- Finalize Database connection plans
- Gate Review

MSDII:

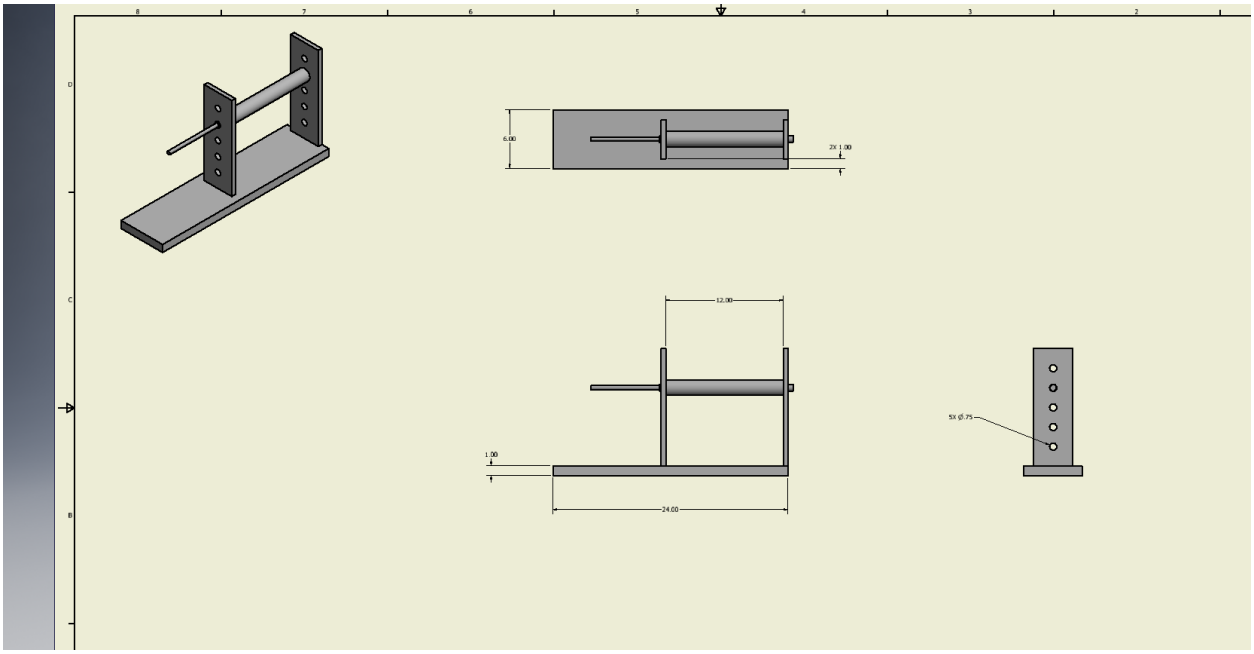
- Build Test Bed
- Survivability Testing
- Sensor Code Set-Up for Post Survivability Test
- Buffering Data in Raspberry Pi
- Finish coding sensor to send on high impacts and to send heartbeat message every 90 seconds
- Implement Database Functionality
- Begin Implementing Web Application/Phone application that displays user data

Drawings:

Electrical: PCB Layout



Mechanical



Software:

If we face too many difficulties with our original option of connecting an android phone to the database, we will continue with option 2 where we will use the raspberry pi to connect to the amazon database directly. This will require a wifi connection that the raspberry pi needs to be able to communicate with.

Option 2: