EE / CprE / SE 491 – sdmay19-01

Athlete Motion Tracking

Week 4 Report

2/14/19 – 2/20/19
Client: Nathan Johnson
Faculty Advisor: Phillip Jones

Team Members:

Nathan Mazarelo —— *Weekly Reporter/Software Developer*
Monte Friestad —— *Spokesperson/Software Developer*
Madeline Rogers —— *Meeting Facilitator/Hardware* Maintainer
Ryan Hansen – *Scribe/Hardware Maintainer*

Weekly Summary

This week our team chose pressure sensors and sent them to the client to be ordered. The manner in how data will be transmitted from the sensors was determined. In the data analysis program, the calculation for the angles were completed and the limbs that were being tracked were given different colors then the rest of the body for easier viewing. In the web app, functionality was created for adding new cards and managing them.

Past Week Accomplishments

- Ordered sensors, System Sketch, Data Transmission – Ryan
  - Sensors
    - Sensors have been ordered and we are waiting on their arrival for testing
  - System Sketch
    - Made a system sketch to see how all components will be integrated with one another.
  - Data Transmission
    - Determined how data from the Arduinos, Mbientlab, and Flexiforce sensors will be transmitted into our database as comma separated values, and to be soon visualized in a graph form.

- Sensor force research, Ordered Sensors, Arduino Shield - Maddie
  - Sensor force
    - Researched the force that running will create for the sensors. Originally, I had just investigated biking. I conversed with the client to determine if

the numbers seemed reasonable compared with what he has seen in the past. Then applied that information to finding the available sensors.
- o Ordered Sensors
  - ▪ Worked with client to order sensors
- o Arduino Shield
  - ▪ Looked into Arduinos and shields for the plan requirements

- Updates to data analysis program - Nathan
  - o Angles
    - ▪ Finished calculating angles for specific points of motion from the data using the NumPy library.
    - ▪ Displayed the angle on the plot so the user can see
  - o Animation
    - ▪ The color of the limbs being tracked are different from the rest of the body so user can easily see what is being analyzed
  - o Chart/Graphs
    - ▪ Starting to work on creating separate plots and graphs for the angles over time

- Continued work on web application – Monte
  - o Cards
    - ▪ Added functionality to the cards, making sure that they can effectively add new cards and manage them
  - o Integration
    - ▪ Nathan and I discussed the integration to make sure that we will be able to put our parts together when the time comes for integration

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Ryan Hansen	Helped with ordering sensors. Made a system sketch detailing the integration of the components. Determined how data from the Arduino and pressure sensors would be transmitted.	8	92
Madeline Rogers	Researched the force that the athlete will use on the sensors. Worked with client to order the sensors. Looked into Arduinos and shield plan requirements.	8	94

Nathan Mazarelo	Finished calculating angles for specific points of motion from the data and displayed them on the plot. Added color to the limbs being tracked.	8	96
Monte Friestad	Added functionality for adding new cards and managing them in the web app. Discussed integration with Nathan	8	91

Plans for Coming Week

- Ryan
    - First round of pressure sensor data testing, which includes experimenting with ways to fit all sensors into an athlete's shoe
- Maddie
    - Look into Arduino code. Have worked minimally with it before so have some experience but not a lot
- Nathan
    - Continue working on creating separate graphs and charts for the data analysis so far
- Monte
    - Continue working on adding data and graphs to cards