EE / CprE / SE 491 – sdmay19-01

Athlete Motion Tracking

Week 4 Report

9/27/18 – 10/4/18
Client: Nathan Johnson
Faculty Advisor: Craig Rupp

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 started experimenting using the ipi software to figure out the requirements needed for using motion tracking cameras. On the software side, we began adding modular elements to our web application and began computation for figuring out angles between vectors. On the hardware side, we started experimenting with the different motion tracking options like skeletal and colors with the Kinect. Functional requirements were made to test if the Kinect was going to be feasible for the project.

Past Week Accomplishments

- Experimentation with ipi software and creation of data acquisition process - Ryan
  - Continued experimenting with ipi software
    - Found out that the software requires a minimum of 3 cameras to have accurate recorded actions
  - Completed block diagram showing how the recording process will connect to meaningful data acquisition

- Experimentation with Kinect and developer toolkit - Maddie
  - Downloaded visual studio to investigate feasibility of using the developer toolkit
    - Found that the code looked pretty intimidating with many different libraries and add-ons
    - Noticed that there is no option for Python and only C# or C++
  - Looked further into the capabilities of the developer toolkit
    - Found that we have options for motion tracking using colors and skeletal attributes

- Experimenting with vector display and practice with computing angles – Nathan
  - Began trying to display vectors and angles onto a plane
    - Was able to plot vectors onto a 3D plane given 3 coordinates which is what the camera data should output
  - Started to compute angles between vectors in a 2D plane
    - Used the NumPy library and the angle functions to calculate angles between 2 dimensional vectors

- Began adding features to the web application – Monte
  - Started creating modular elements in the web app
    - Tested placing elements into the web application dynamically
    - Created a way to make anything on web application an arrangeable block so it can be altered in the future when we must add more to the site

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Ryan Hansen	Continued experimentation with ipi software to find limitations. Created a process that will link the motion tracking and data acquisition.	7	23
Madeline Rogers	Looked into the capabilities of Kinect through the toolkit to find more options for motion tacking. Found out that the Kinect supports color and skeletal tracking.	7	24
Nathan Mazarelo	Was able to plot vectors on a 3D plane using coordinates to simulate data from camera. Began creating a formula for calculating angles between 2D vectors.	7	24
Monte Friestad	Began adding modular elements to the web application. Created a way to make elements into an arrangeable block for future use.	7	24

Plans for Coming Week

- Ryan
  - Find a way to acquire 3 Kinects to complete the testing of the ipi software
  - Find a location to start the baseline testing for the feasibility of the Kinect
- Maddie
  - Find a way to test if the Kinect can capture video at the required fps and rpm needed to complete the project

- Nathan
  - Research more on how to integrate Python with web application to place previous vector plots and computations onto the site
- Monte
  - Research more into creating charts and graphs from the data extracted from the cameras in python
  - Add previous code to the GitHub

Gitlab Activity Summary
Nothing to report.