EE/CprE/SE 491 WEEKLY REPORT 9

Nov 7, 2024 12:00 PM - Nov 14, 2024

Group number: 49

Project title: Slowpitch softball device

Client/Advisor: Nicholas Fila

Team Members/Role:

Cael Schreier: Bookkeeper and Code Review

Andrew Kinneer: Lead System Designer

Kyle Nachiengane: Lead Testing Engineer

Sam Skaar: Coordination and Documentation Lead

Kolby Moorman: Lead Client Outreach

- **Weekly Summary**

This week we have continued to iterate on our height and ball tracking methods for our project. We have found a way to track a softball at any time of day in any lighting conditions and will continue to refine that process moving forward, but it allows us to have an answer to that lingering issue for many weeks. We have also discussed different approaches to our height tracking algorithm, such as focusing more on the ball's relative position in the frame rather than it's exact height (if a ball falls in a predetermined "legal zone" rather than live height calculating). We will continue to experiment with these two methods going forward to determine what will be best for next semester's implementation. We are also continuing our mobile development endeavors and getting some of our early code running on various iPhone's and emulators.

- **Past week's accomplishments**
  - Andrew Kinneer: Optimizing pitch tracking further for different lighting conditions, used 3rd party footage to test against many different lighting conditions.
  - Kyle Nachiengane: Worked on getting qt to connect to iphone and got opencv in the project.
  - Cael Schreier: Improving height/illegal pitch detection algorithm by considering camera angles and accurate distances between home plate, the pitcher's mound, and using the height of a pitcher as a height base.
  - Kolby Moorman: This week, I continued to dive into why QT creator wasn't able to build correctly which was stopping us from prototyping a frontend application. I gathered that it could be a .qmlls file error however it works on "pre built" projects.
  - Sam Skaar: This week I tried a new implementation of height tracking that I think worked really well. We should be able to move forward with it. I want to see how perspective transforms improve it as well.

- **Pending issues**
  - Live height tracking vs preprocessed height detection
  - QT Creator build errors

- **Individual contributions**

NAME	Individual Contributions	Hours this week	HOURS cumulative
Andrew Kinneer	Improved tracking with different lighting conditions	5	39
Kyle Nachiengane	Continued working on qt build to ios and getting a working app.	5	37
Cael Schreier	Improving height/Illegal pitch detection algorithms	5	39
Kolby Moorman	Continued to try and debug why there were QT creator build errors	4	36
Sam Skaar	Pixel counting height tracking implementation.	5	39

- **Plans for the upcoming week**
  - Andrew Kinneer: Test tracking on a whole softball game using footage from online to see accuracy over a long period of time
  - Kyle Nachiengane: Keep working with qt to get the iPhone emulator working and get some sort of ball tracking.
  - Cael Schreier: Continuing to work on improving our height detection accuracy and consistency, helping the team with compiling our final demo and presentations for our faculty panel coming up.
  - Kolby Moorman: I plan to transition to my windows laptop to see if I can get a qt build going on there where we can use the IOS simulator to simulate our application running.
  - Sam Skaar: Add a perspective transform to have an accurate calculation throughout the entirety of the pitch. (From the last implementation)

- **Summary of weekly advisor meeting**

This week during our advisor meeting, we showed our progress when it came to height tracking of a softball. While doing this we also discussed different approaches we could take like rather than tracking the pitches height through the entire pitch, determining a “legal zone” and from there make sure a pitch enters it and doesn’t go above it. We also discussed ongoing issues of QT build errors we are encountering on the front end.