

Softball Team 2



EE/CprE/SE 491 WEEKLY REPORT 4

Oct 10, 2024 12:00 PM - Oct 17, 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, a lot of research was conducted on how to move forward with both softball tracking as well as height tracking. We are currently considering moving to some more advanced methods of object tracking with MOSEE, KCF, or something custom to use the ball's previous location to determine where it is going to be. We still have to solidify whether our final product will be a phone app or a completely separate device. We updated our website to include our bios and other information.

○ **Past week's accomplishments**

- Andrew Kinneer: Looked into more methods of height tracking and the math required to convert the x,y arc of the ball to its height on the field. Researched the differences between MOSEE and KCF to determine which would be more applicable to our project. Started a prototype to detect when the ball has been “pitched” and is traveling in an arc.
- Kyle Nachiangane: Looked into creating apps for iPhone. Tested different image processing calibrations with different videos.
- Cael Schreier: Kept implementing and trying to “break” OpenCV’s framerate to test our processing limits, as well as ways around it.
- Kolby Moorman: Researched more into MOSEE after hearing professor Jones talk about it. Began trying to implement MOSEE object tracking.
- Sam Skaar: Lightning Talk Presentation, Logo Design, “improved code” (stick to Drew’s), Initialized Team Website Environment.

○ **Pending issues**

- Specific device to use
- Daytime Tracking
- iPhone Integration
 - iPhone vs. separate device
- Specific tracking algorithm
- Baseline Code Base

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>HOURS cumulative</u>
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Andrew Kinneer	Researched height tracking methods and MOSEE and KCF. Started “pitch” detection.	6	19
Kyle Nachiengane	Looked into creating apps for iPhones. Tested different image processing calibrations with different videos.	5	18
Cael Schreier	Continuation of performance testing in OpenCV	4	19
Kolby Moorman	Began trying to implement MOSEE object tracking.	4	18
Sam Skaar	Website + Research + Field work	6	25

○ **Plans for the upcoming week**

- Andrew Kinneer: Finalize pitch detection. Get a better plan for how we will use objects in the frame to find the height of the ball.
- Kyle Nachiengane: Continue looking into iPhone apps and work with team to get accurate pitch detection.
- Cael Schreier: Help with pitch detection algorithm optimization, and work on math for finding height in an image.
- Kolby Moorman: Do some field testing with string/tape for 6ft and 12ft of ball. “Finish” MOSEE object tracking implementation
- Sam Skaar: Look into physics projections to shrink the area of the frame that we’re looking for the ball. Past Week File uploads for the website.

○ **Summary of weekly advisor meeting**

This week we discussed our object tracking progress, as well as areas we still need to improve on (specifically daytime tracking). We also discussed some issues that we need to look into for our device going forward, including camera requirements (framerate, processing time, resolution, etc), different classical techniques to try and implement (specifically MOSSE), and potential deployment options for our product (phone app, camera and raspberry pi, web app). We also are in the process of getting a YouTube playlist set up with our testing videos to display on our website.