

Team “ACES”

Deliverable H

GNG 1103

Group G01-1

Team members

Lucien Bazinet (300310760)

Maxwell Forley (300242803)

Tanvi Pradhan (300185912)

Hannah Dos Santos (300286689)

1. Abstract.....	2
2. Introduction	2
3. Prototype 3	2
4. Prototype 3 testing and results.....	5
5. Prototype 1-3 improvements.....	6
6. Client/user Feedback	6
7. Updated target specifications, BOM, detailed design	6
8. Conclusion.....	6
9. Wrike.....	7

1. Abstract

This week we created our final presentation to present to our entire class. To create the presentation, we used content from our deliverables and did some extra research as well. Now, we will use all the feedback received from our clients and TA's to develop our third and final prototype. We will also improve the user interphase of our design to make it more visually appealing.

2. Introduction

In this deliverable we will use feedback received in our client meetings, as well as general feedback from our TA's and professors to make a refined Prototype III. We will use our accumulated knowledge to attempt to fix the errors present in previous prototypes and learn from them. We will also discuss our prototype III testing results.

3. Prototype 3

Protype 2 was able to track the position of the ball with a camera in a variety of positions. The accuracy was reasonable as a tennis ball's true position was off from the calculated position by a maximum of 4cm with the camera 1.4m away and the ball having a radius of 3.2cm. Since the code could track the ball and display it in the virtual environment, protype 3 focused on creating a user interface for ease of use. The UI is built to be simple and easy to use as well as minimalistic since the focus of the final product will be its functionality. Unfortunately, the record button was not completed due to compatibility issues with unity and Python. The help, quit, and watch button were all successfully

implemented.

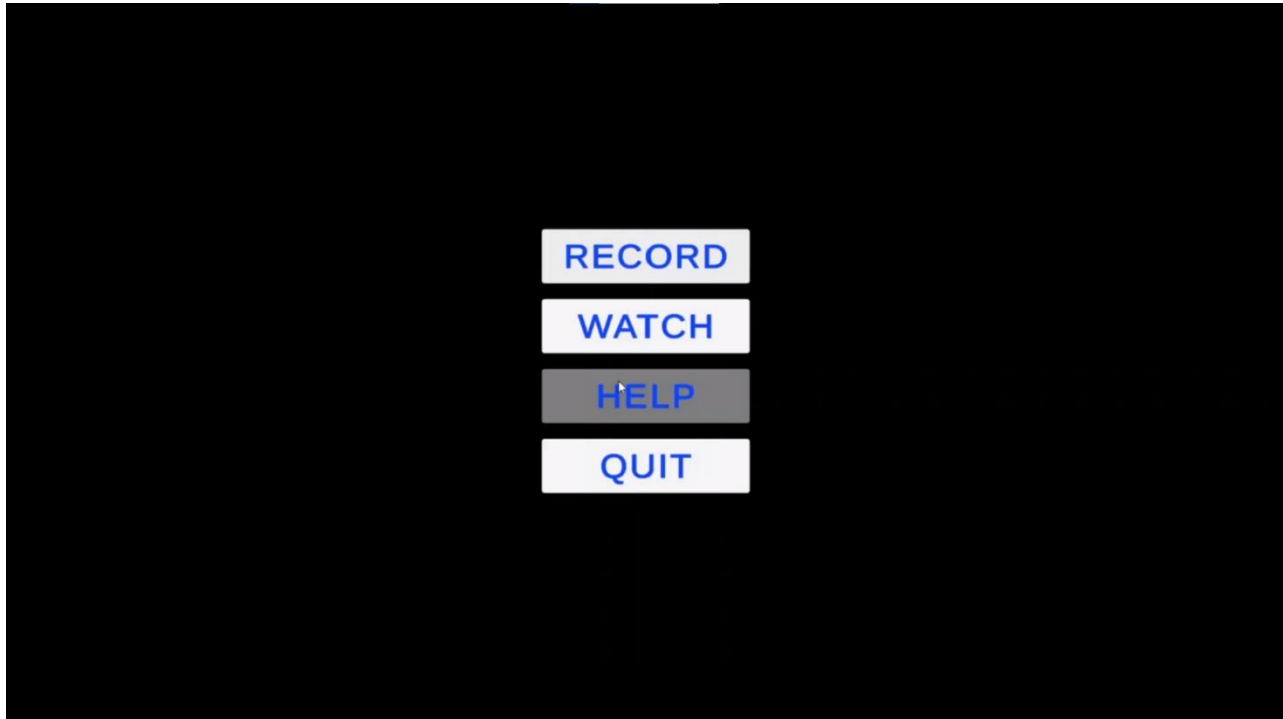


Figure 1: main menu when the app is opened

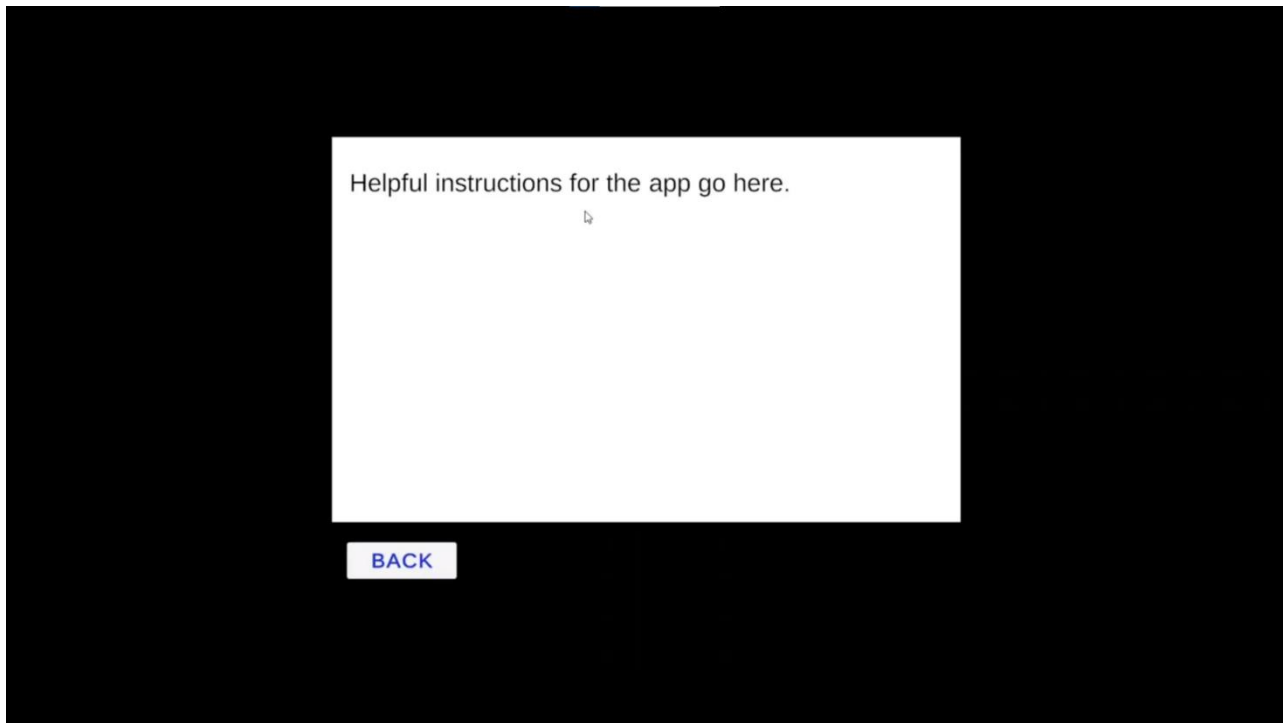


Figure 2: What the user sees when they click the "Help" button from the main menu



Figure 3: What the user sees when they click the "Watch" button from the main menu

The watch button allows the user to input the path to a txt file saved on their computer from recording a match and watch the ball move in the unity environment. The user can also control their point of view and from what angle they view the ball.

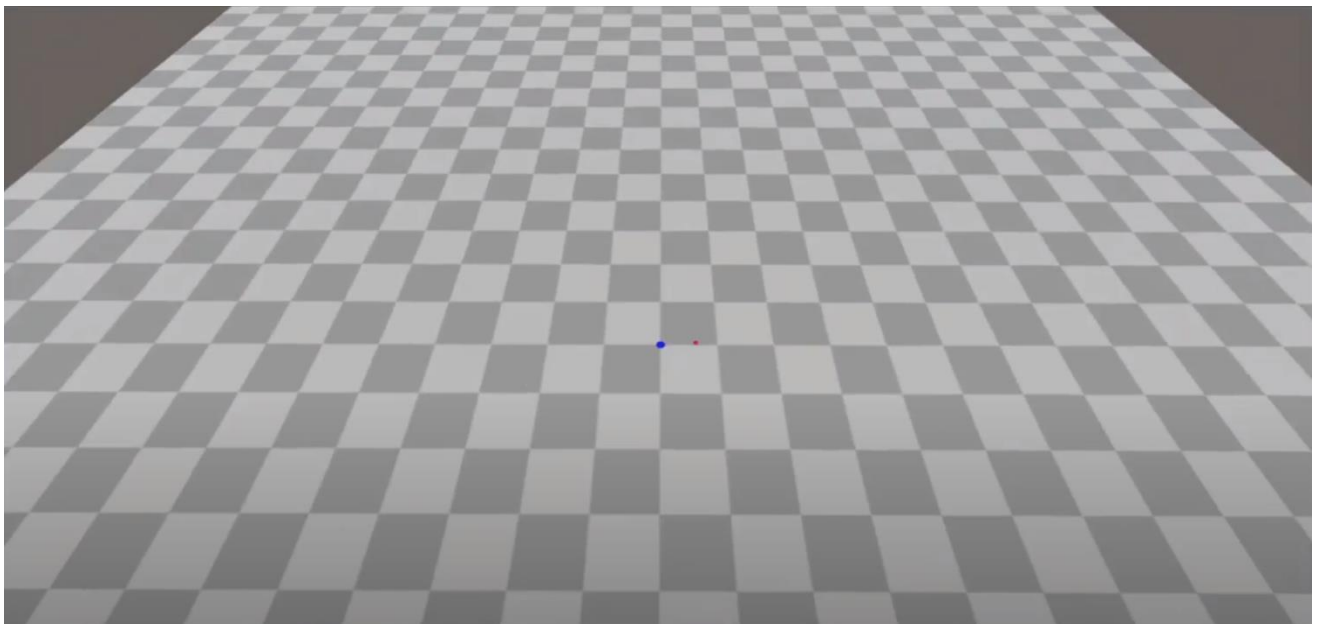


Figure 4: Unity environment where the ball moves around

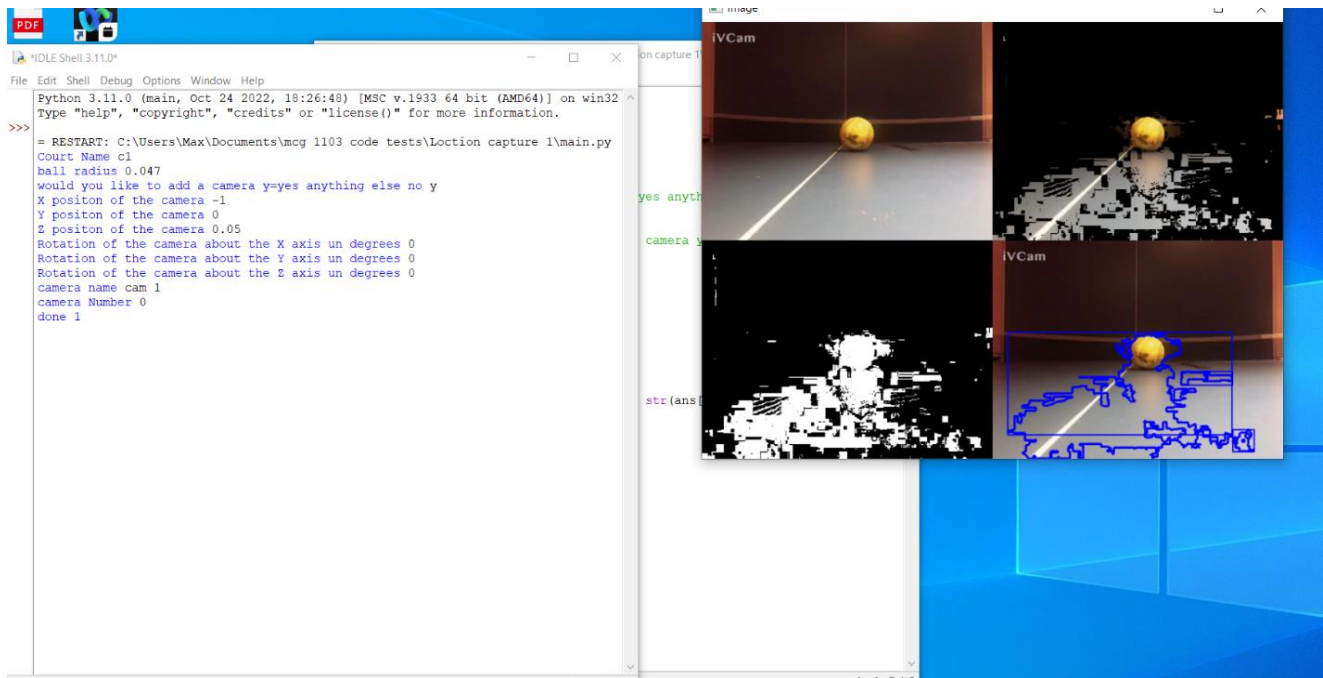


Figure 5: Incomplete user interface for calibrating cameras and recording a match

4. Prototype 3 testing and results

Prototype 3 was tested by navigating the user interface and clicking on all buttons to ensure they functioned as expected. 3 people were also shown the user interface and were asked for feedback on ease of use.

Pass

When clicked all buttons take the user to the correct menu or scene.

People interviewed are able to use the software with little to no help or explanation.

Fail

When clicked buttons do not perform as expected.

People interviewed are unable to use software and provide negative feedback.

Results

Of all buttons on the user interface the only one that did not function was the “Record” button as it was not successfully implemented. The program also failed to return to the main menu after a game was watched.

People interviewed understood how to use the app with little explanation. Some people got confused by the camera free movement and ended up below the surface where the game was occurring.

Considering these results and the time left a button should be added to reset the camera's positions while spectating. The recording portion of the app should also be implemented into the user interface.

5. Prototype 1-3 improvements

The first prototype was determining that the ball would properly show up in unity, we used the base code from our unity lab in order to do this, the steps going forward from this were to then allow the camera to track the location of the ball. The second prototype was not meeting the expectations we put out; however, the camera was able to see the ball and place it into unity and with some accuracy would display its location to an origin point, but would only be able to move in a 2D space in unity. The third prototype aimed to accurately track and display the location of the ball in unity and record the match so that it could be played back on a later date. We were successful in doing this and the group is confident everything will go according to plan for design day.

6. Client/user Feedback

The user feedback received was from friends and family of the group members, the goal was to see if they understood how to insert the camera information and origin location (center of the court) so that the information that is sent to unity was correct. Every user who was familiar with technology had no issues in inputting this information and correctly running the software. The professor and students enjoyed the final presentation to the class.

7. Updated target specifications, BOM, detailed design

Our target specifications, bill of materials and detailed design stayed the same through our past two prototypes.

8. Conclusion

For our final prototype, we finished making our user interface as discussed from the previous deliverable and tested our process through the implementation of a tennis ball. We received a lot of feedback from our client on improving readability and enhancing our user interface. Overall, our user interface is developed and we are ready for design day.

9. Wrike

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=jiCbGzdnOMJoMxtozH4N5ZECif5O8hKI%7CIE2DSNZVHA2DELSTGIYA>