Liaison Meeting Agenda

Wednesday, Apr 24th, 9:15am-10:00am

Agenda Items:

1. Last liaison meeting :O
2. The code is all done!
    a. Code freeze was yesterday
    b. We got a working build that is ready to be shared
3. Now time for documentation, final presentation, and final document

Liaison Meeting Agenda

Wednesday, Apr 17th, 9:15am-10:00am

Agenda Items:

4. Team Member Updates
    a. Clara
        i. Side Panels are all done and merged!
            1. Code is documented and a Google Doc giving a broader overview is completed: Custom Side Panels & Eyetracking
        ii. Debugging package build errors
            1. Need to test my changes
        iii. Working on reading and writing to a config file for camera calibration
            1. Reading from file on start up is done
            2. Writing to file on save button click is done
            3. Needs testing now
    b. Hannah
        i. Testing and debugging filtering; comparing mean and median
        ii. Hard to test consistently since data stream is ever evolving; attempting workaround by writing data to a file and analyzing
    c. Maggie
        i. Pretty much finished locking, saw Eric's message & haven't had a chance yet to test with new logic and site visit data (updated it to be a toggle not a switch)
        ii. Fixed turns compass rotating weird
        iii. Set up config files for waypoint data & websocket URI
        iv. Documented code, including brief docstrings on how to listen for new channels/variables in the websocket client
            1. Also started working on pdf documentation
        v. Getting really close on waypoints, found an old mapbox unity project and converted that to the newer api version, just needs a bit more tinkering, later in the week I can send a video of it in the headset!
    d. Kerry
        i. Working on poster (make better posters video)
        ii. Debugging waypoints with Maggie

Liaison Meeting Agenda

Wednesday, Apr 10th, 9:15am-10:00am

Agenda Items:

5. Team Member Updates
    a. Clara
        i. Got a script for dropdown working
        ii. CurvedUI is interfering with the controller actions. Whenever, the header is removed the controllers work
    b. Hannah
        i. Implemented median filter for heading data; need to test
        ii. Working on project poster
    c. Maggie
        i. Waypoint feature is really well built out
            1. Still struggling with converting points from lat lon depth to world coordinates
        ii. Fixed locking (channel name issue)
        iii. Started working on fixing turns compass
    d. Kerry
        i. Working on fixing lat lon depth and no way is clearly working

Liaison Meeting Agenda

Wednesday, Apr 3rd, 9:15am-10:00am

Agenda Items:

6. Team Member Updates
    a. Clara
        i. Helped Hannah debug gaze interacting with the calibration buttons
        ii. Now working on adding a dropdown to her settings menu to select the pilot
    b. Hannah
        i. Updated and merged camera calibration menu to main
            1. Disabling gaze interaction with button using hack from Clara
            2. Added esc button toggling visibility for menu
    c. Maggie
        i. Still working on debugging waypoints, somehow they are not displaying in their unique locations, but I think the latitude/longitude conversion is correct now
        ii. Also worked on testing lock value UI elements
            1. Seems to work fine on our computer, but might be due to a lack of locking data?
    d. Kerry
7. End of year goals:
    a. Fix turns compass is rotating weirdly
    b. Locking not quite working?
    c. Look at smoother action on the compass wheel.
        i. Downsampling vs. only updating with certain magnitude of value change vs. rolling average filter
    d. Sort out the calibration button pushing using joysticks
        i. I think we figured this out? it was just weird software issues
    e. Create config files for calibration constants and websocket URIs
        i. Put all config files in a config folder
    f. Waypoints wrapping up
    g. Side panels wrapping up
    h. Code documentation using xml commented functions that can use generators like doxygen
    i. <u>Merge feature branches into the main</u>
    j. Move toward delivering an executable that doesn't need the Unity IDE to run.

Liaison Meeting Agenda

Wednesday, Mar 27th, 9:15am-10:00am

Agenda Items:

8. Team Member Updates
    a. Clara
        i. Built out and tested the custom side panel pilot profiles
        ii. Improved the side panel interaction interface
        iii. Added in the right-side panel
        iv. Also potentially fixed the heading bar problem (still needs testing)
        v. Next steps: Create an option in the settings menu to select the pilot. Add different metrics and plots that could be added to the side panels.
    b. Hannah
        i. Fisheye camera calibration menu is working!
            1. Also confirmed it works with our live camera, works without having to split the feed
            2. Gaze was inadvertently triggering the buttons; had to disable
            3. calibrating things is harder than expected
    c. Maggie
        i. Finished waypoint generation, just working on debugging world coordinate to screen point logic
        ii. Updated locking & lat/lon listening logic in waypoint branch, ready to merge locking & lat/lon listening in after a bit more testing today
    d. Kerry
9. Team Viewer problems
10. Site visit logistics?

Liaison Meeting Agenda

Wednesday, Mar 20th, 9:15am-10:00am

Agenda Items:

11. Team Member Updates
    a. Clara
        i. Eye tracking working
            1. Have a gaze target to show the left side panel and then looking in the center of the screen hides it
            2. Now working on custom profiles for the pilots to configure the side panels
        ii. Weird bug where the eye tracking stuff is messing up the heading bar
    b. Hannah
        i. Calibration menu progress
            1. Laser pointer is now working
            2. However, it appears to be interfering with backend code for menu buttons somehow; troubleshooting in progress
    c. Maggie
        i. Waypoints debugging
            1. Only showing one right now, but found some promising things online to make all appear (similar behavior to turns overlay)
    d. Kerry
        i. Working on waypoint tracking button pressing
12. Questions about site visit

Liaison Meeting Agenda

Wednesday, Mar 5th, 9:15am-10:00am

Agenda Items:

13. Team Member Updates
    a. Clara
        i. Got eye tracking working in the demo scene within our project, now need to debug why interactions are not working in our main scene
        ii. Wrote a script to pull side panels into view
            1. Once gaze interaction is working in our project I can test this
    b. Hannah
        i. working on SteamVR joystick interactions – following some tutorials but still have not resolved, possibly switching to more complex processes next
    c. Maggie
        i. Got waypoint cloning working, just need to fix deleting them too early, and maybe nail down how far we want this range to be & how often the displayed waypoints should be updated.
        ii. JSON is probably preferred data format (just to stay consistent with WS server parsing), currently working off of fake data
    d. Kerry
14. No meeting next week, spring break

Liaison Meeting Agenda

Wednesday, Feb 28st, 9:15am-10:00am

Agenda Items:

15. Team Member Updates
    a. Clara
        i. Changing from OVR to OpenXR toolkit
            1. There are helpful demo scenes provided
            2. Still struggling with getting eye gaze information into unity
                a. Currently using a newer version of an Oculus asset but it is not working, so I will try using the deprecated asset that the documentation describes using
    b. Hannah
        i. Camera calibration menu in progress
    c. Maggie
        i. Implemented the basics of waypoint tracking & updated heading/depth locking
        ii. Waypoint tracking questions:
            1. Data input format
            2. Consideration of depth? Or just 2-d line (yes, depth is more funky but start with this)
            3. 500 meters range on waypoints!!!!!
    d. Kerry
16. Spring Presentation Feedback
17. Adjustment of Upcoming Deliverables
18. Site Visit Confirmation (March 28-29)

Liaison Meeting Agenda

Wednesday, Feb 21st, 9:15am-10:00am

Agenda Items:

19. Team Member Updates - We mostly all worked on the Spring Presentation!
    a. Clara
        i. Eye tracking is being tricky as expected
            1. Will try switching from OVR to openXR
    b. Hannah
    c. Maggie
        i. Fixed WS server startup, copied short bash script in Dockerfile
        ii. Started collecting data types from WS server to use for waypoint tracking
    d. Kerry
20. Spring Presentation! Spring Presentation

Liaison Meeting Agenda

Wednesday, Feb 14th, 9:15am-10:00am

Agenda Items:

21. Team Member Updates
    a. Clara
        i. Debugging UI things & implementing some liaison feedback from last meeting
        ii. Experimenting with eye tracking for side panels
            1. Using OVR to get in eye tracking information from the headset
            2. Designed a custom script to hopefully tell if the user is looking at the the game object the script is attached to
    b. Hannah
        i. Working on adding in-game fisheye calibration menu
    c. Maggie
        i. Debugging UI things & working on getting lcm-logplayer to run on our whole data subfolder in the container
        ii. Researching & prototyping waypoint tracking
    d. Kerry
        i. Researching waypoint tracking
22. Clarification on waypoint projection deliverable
23. Spring Presentation next week!
    a. Super rough draft of our slides: Spring Presentation

Liaison Meeting Agenda

Wednesday, Feb 7th, 9:15am-10:00am

Agenda Items:

24. Team Member Updates
    a. Clara
        i. Debugged data displays on headset and moved around UI elements
        ii. Started researching eye tracking with Unity and enabled headset settings to get eye tracking values in Unity
            1. The eye tracking will be Meta Quest Pro specific, but, will design it to be as modular as possible so that getting in the meta quest eye values can be easily swapped for a different headset ecosystem
    b. Hannah
        i. Merging the heading display with the headlocked elements
        ii. SteamVR troubleshooting
    c. Maggie
        i. Finished implementation of WebSocket client, added documentation/skeleton code for when we are adding more data types we want to pull (and worked on debugging how these data values get displayed in the UI)
    d. Kerry
25. Questions About Data Feed/Display
    a. Is there a way we can get into the source code of the server and change the input of lcm-logplayer so that we can parse a whole folder of data?
    b. Where does information about depth/heading/etc. lock values come from? (“have_bottom_lock”, “lock_btm”, “lock_ref”?)
    c. When we display turns, we are a bit confused on how we should display the number and compass asset.
        i. The data for turns seems to be coming in as a turns count, not an angle measurement (right?), so maybe we can just use the heading angle measurement to update the compass? Any tips on this?
26. Site Visit Planning
    a. Please (everyone) fill out this form!

Liaison Meeting Agenda

Wednesday, Jan 31st, 9:15am-10:00am

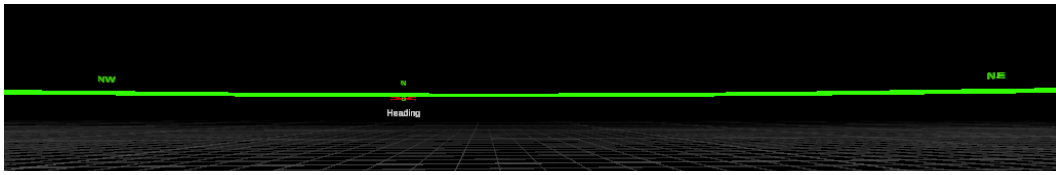
Agenda Items:

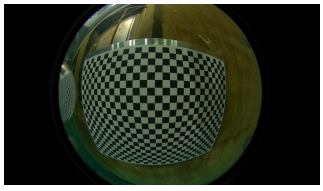
27. Team Member Updates
    a. Clara
        i. Heading element added
            1. Have the code to use the heading value from the LCM Client
        ii. Turns overlay added
            1. Need to find the turns type file to get the values updating
        iii. Make a LCMListener game object
        iv. Added in depth and altitude text to the UI and modified Hannah's scaffolding script so that they can propagate with values
        v. Temporary side menus added
    b. Hannah
        i. Continued fisheye skybox calibration, troubleshooting, and debugging new bugs from SteamVR
    c. Maggie
        i. Running into some bugs with client, looking for some help
    d. Kerry
28. Data types we are looking for:
    a. Lock values: heading, depth, altitude
    b. turns

Liaison Meeting Agenda

Wednesday, Jan 24th, 9:15am-10:00am

Agenda Items:

29. Team Member Updates
    a. Clara
        i. Added in heading UI element, which uses the CurvedUI and mimics design of the 2D heading element
            1. 

            2. Now need to position it in the headset better and make it respond to incoming LCM data
        ii. Found some resources about how to get the eye tracking information from the headset to the host computer
        iii. Will add the turns UI element
        iv. Will also start thinking about the empty side panels and positioning them off to the side in VR
    b. Maggie
        i. Implemented a LCM listener within our Unity project
            1. We can now access data published by the websocket server to incorporate into our existing UI elements
        ii. Working on making the data accessible to the rest of the scripts in the project (so that UI elements can use this data)
        iii. Also working on a short script to allow the server to parse a folder of data as opposed to one sample file
    c. Hannah
        i. Fixing fisheye skybox projection
            1. Fixed code where the right eye was loading images intended for the left camera; this was because Unity's backend was not updating the indexing for right/left headset screen properly
            2. Adding a customizable FOV parameter, which appears to have fixed the problem where the cameras seemed way too zoomed in
            3. Double check FOV, e.g. for
            
    d. Kerry

        i. Worked on connecting LCM data with websocket server using NuGet unity package
        ii. Creating game object to store LCM data?

30. Spring Semester Planning
    a. Important dates:
        i. **1/31**: Deliverable, Video projection debugging, heading asset, turns overlay, empty side panels, read in LCM data
        ii. **2/20**: Clinic class Spring presentation
        iii. **2/29**: Deliverable, Toggling to bring side panels into view using eye tracking, passthrough of pilot controls
        iv. **Week of 3/11**: Spring Break
        v. **4/8**: Deliverable, Landmark Projection
        vi. **4/9**: Feature Freeze
        vii. **4/22**: Code Freeze
        viii. **4/30**: Projects Day Poster Session
    b. Site visit?
        i. Constraints: before code freeze (4/22) and ideally before feature freeze (4/9) to provide adequate time for changes

Liaison Meeting Agenda

Wednesday, Jan 17th, 9:30am-10:00am

Agenda Items:

1. Welcome back!
2. Meeting Schedule

Liaison Meeting Agenda

Wednesday, Dec 6th, 9:30am-10:30am

Agenda Items:

1. Last liaison meeting for the semester :'(
2. Team viewer setup after break because the Zed camera comes in stitched together
3. New team lead next semester!
    a. Will need meeting changes next semester
4. The midyear report is going well
5. Updates from each team member
    a. Clara
        i. Unity was not using the transformation matrix as desired. So I ended up modifying the skybox texture script to take in the matrix and multiply the texture coordinates of the right video feed by the matrix to transform the right camera feed. This makes sure that lines are parallel in both the left and right cameras.
    b. Hannah
        i. Fleshed out the script to load and update data values; this is now done, with just a placeholder left for when we are ready to pull data from the LCM
    c. Kerry
    d. Maggie
        i. Finished setting up the LCM websocket server on our local network. Working now to deserialize the incoming JSON data and display it in the headset.
        ii. Question for Eric: Did you have a separate script that allowed for the play of multiple LCM data files in a row/how does the data input port work for live playback? Do we just change the uri in the asyncio script?

Liaison Meeting Agenda

Wednesday, Nov 29th, 9:30am-10:30am

Agenda Items:

6. Working on our Midyear report
7. Updates from each team member
    a. Clara
        i. Camera transformation matrix is saved to a JSON file that can be read in by Unity and used as a transformation matrix for the Skybox material
    b. Hannah
        i. Successfully implemented headlocking data display with placeholder data
            1. UI placement challenges:
                a. We have a much smaller field of view than anticipated in which we can place the data without making it too uncomfortable to strain the eye by looking at the sides
                b. At the same time, we don't the data to be too close to the center of the FOV, otherwise it would obscure the view of the video feed
            2. Demos

Left eye Right eye

        a. really low-quality phone recording of the inside of the headset
        b. low-quality phone recording of the computer's mirrored display of the left eye feed
    c. Maggie & Kerry
        i. Began working with Eric's instructions for the new Docker tool, seems to be building the docker image correctly and running it as we are able to initiate a shell, but when we test playback it tells us the speed and then idles for a few minutes before stopping and entering a new command line in the shell (seems to be running playback just not printing properly maybe?)

```
 => => writing image sha256:89a3c974f01b15fa52ac5cd18846f766b77ae34dfc4d9bbbe20bce02d4200e6a                    0.0s
 => => naming to docker.io/mbari/lcm-websocket-server:latest                                                    0.0s
WARNING: buildx: git was not found in the system. Current commit information was not captured by the build

What's Next?
  View a summary of image vulnerabilities and recommendations → docker scout quickview
PS C:\Users\MBARI-23\lcm-logfile-playback> docker scout quickview
    ! New version 1.2.0 available (installed version is 1.0.9) at https://github.com/docker/scout-cli
    v SBOM of image already cached, 145 packages indexed

  Target               |  local://mbari/lcm-websocket-server:latest  |  0C   1H   5M   34L
    digest             |  89a3c974f01b                               |
  Base image           |  python:3.10-slim-buster                    |  0C   1H   5M   34L
  Updated base image   |  python:3.10-slim-bullseye                  |  0C   0H   1M   27L
                       |                                             |       -1   -4    -7

What's Next?
  View vulnerabilities → docker scout cves local://mbari/lcm-websocket-server:latest
  View base image update recommendations → docker scout recommendations local://mbari/lcm-websocket-server:latest
  Include policy results in your quickview by supplying an organization → docker scout quickview local://mbari/lcm-websocket-server:la
test --org <organization>

PS C:\Users\MBARI-23\lcm-logfile-playback> docker run --name lcm-websocket-server --rm -e HOST=0.0.0.0 -e PORT=8765 -p 8765:8765 -e CH
ANNEL=".*" -v C:\Users\MBARI-23\lcm-logfile-playback\lcm_types\generated\gss:/app/gss -v C:\Users\MBARI-23\lcm-logfile-playback\sample
_data:/data -e LCM_PACKAGES=gss -d mbari/lcm-websocket-server
ce31189d7dc9f6b945740b6abb0807cb7caccef32856c2ecd9b4026c11e10b4e
PS C:\Users\MBARI-23\lcm-logfile-playback> docker run --name lcm-websocket-server --rm -e HOST=0.0.0.0 -e PORT=8765 -p 8765:8765 -e CH
ANNEL=".*" -v C:\Users\MBARI-23\lcm-logfile-playback\lcm_types\generated\gss:/app/gss -v C:\Users\MBARI-23\lcm-logfile-playback\sample
_data:/data -e LCM_PACKAGES=gss -d mbari/lcm-websocket-server
docker: Error response from daemon: Conflict. The container name "/lcm-websocket-server" is already in use by container "ce31189d7dc9f
6b945740b6abb0807cb7caccef32856c2ecd9b4026c11e10b4e". You have to remove (or rename) that container to be able to reuse that name.
See 'docker run --help'.
PS C:\Users\MBARI-23\lcm-logfile-playback> docker exec -it lcm-websocket-server /bin/bash
root@ce31189d7dc9:/# ls /data
lcmlog-2023-09-19.40_telemetry.gssbin
root@ce31189d7dc9:/# lcm-logplayer /data/lcmlog-2023-09-19.40_telemetry.gssbin
Using playback speed 1.000000
```

```
(base) PS C:\Users\MBARI-23\lcm-logfile-playback\test> pip install -r .\requirements.txt
Requirement already satisfied: websockets in c:\users\mbari-23\anaconda3\lib\site-packages (from -r .\requireme
s.txt (line 1)) (10.4)
(base) PS C:\Users\MBARI-23\lcm-logfile-playback\test> python test_websocket.py
Traceback (most recent call last):
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\runners.py", line 118, in run
    return self._loop.run_until_complete(task)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\base_events.py", line 653, in run_until_complete
    return future.result()
           ^^^^^^^^^^^^^^^
  File "C:\Users\MBARI-23\lcm-logfile-playback\test\test_websocket.py", line 9, in print_all_ws
    blob = await websocket.recv()
           ^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\MBARI-23\anaconda3\Lib\site-packages\websockets\legacy\protocol.py", line 551, in recv
    await asyncio.wait(
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\tasks.py", line 418, in wait
    return await _wait(fs, timeout, return_when, loop)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\tasks.py", line 525, in _wait
    await waiter
asyncio.exceptions.CancelledError

During handling of the above exception, another exception occurred:

Traceback (most recent call last):
  File "C:\Users\MBARI-23\lcm-logfile-playback\test\test_websocket.py", line 16, in <module>
    asyncio.run(print_all_ws(uri))
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\runners.py", line 190, in run
    return runner.run(main)
           ^^^^^^^^^^^^^^^^
  File "C:\Users\MBARI-23\anaconda3\Lib\asyncio\runners.py", line 123, in run
    raise KeyboardInterrupt()
KeyboardInterrupt
(base) PS C:\Users\MBARI-23\lcm-logfile-playback\test>
```

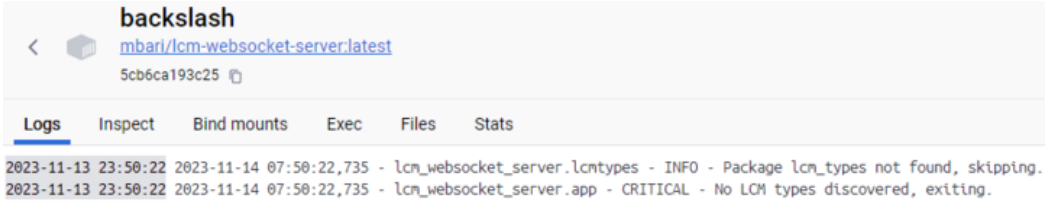
- Similar problem when running the websocket server test script

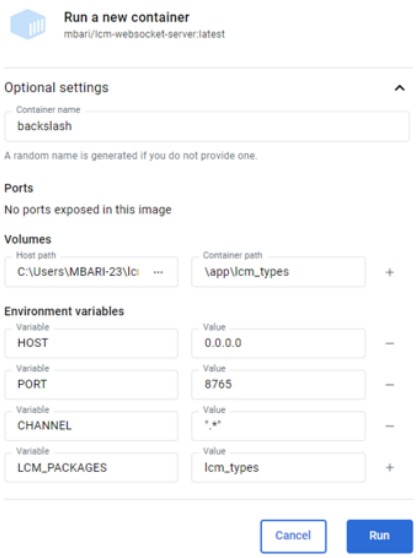
Liaison Meeting Agenda

Wednesday, Nov 15th, 9:30am-10:30am

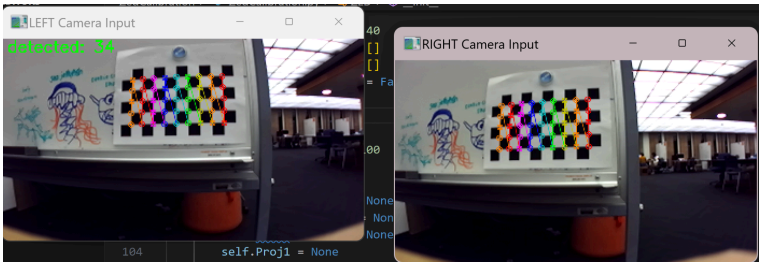
Agenda Items:

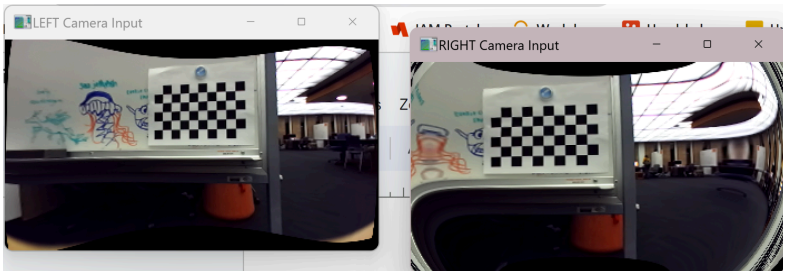
8. Updates from each team member
    a. Maggie
        i. Setting up Docker container for LCM websocket server, have some errors when building from pre-packaged MBARI image





        ii. Next, Unity to subscribe to server feed to display LCM data in UI
    b. Kerry
        i. Fixing the errors related to the fake LCM player
        ii. Jupyter notebook?
    c. Hannah
        i. Debugged build errors; the Unity project with the skybox video projections is now building successfully.
    d. Clara
        i. Working on a system to generate a camera calibration file





(right camera is quite messed up probably because of the scratch)

ii. Next, figure out how to use the values from the config file to configure the video feed from AVPro Live camera

9. UI design showcase
    a. Is there a reason the color used is green?
    b. Turns animation?
        i. If animation is desired, should the ship or ROV be at the 0° reference point?

Liaison Meeting Agenda

Wednesday, Nov 8th, 9:30am-10:30am

Agenda Items:

10. Updates from each team member
    a. Clara: Working on trying to get fish eye shaders on live camera feed
        i. Not adding the new properties I tried to create into the LiveCamera component
        ii. Trying something different by using the texture field in the uGUI component
    b. Maggie:
        i. Finished setting up LCM, working on setting up Docker container
        ii. In parallel, working with Olin's fake LCM player to get integration of LCM data into Unity components (so that when LCM server is set up, we can display LCM data properly!)
    c. Hannah:
        i. Successfully projected the live camera feed into the fisheye skybox
        ii. Integrated AVPro Live Camera with the Olin SkyboxTextureManager script after cleaning out all extraneous code from that script
        iii. Up next: build and test in the actual headset
    d. Kerry:
        i. Working on figuring out fake LCM publisher
        ii. Also working on setting up fake LCM player
        iii. Bumping the websocket server Jupyter notebook

Liaison Meeting Agenda

Wednesday, Nov 1st, 9:30am-10:30am

Agenda Items:

11. Updates from each team member
    a. Clara: Video playback working and trying to get AVLivePro working
        i. Also need to figure out how to switch to playback if livecam is not available
        ii. Olin doesn't have in code, so it's very hard to tell how they handle the cameras and what code/ game objects are dependent on other code/ game objects
        iii. We are going to limit our referencing of the Olin code
    b. Hannah: Video playback working with fisheye skybox projection
        i. Need to figure out how to add fisheye texture to AVLive pro
    c. Maggie: Completed LCM and Docker setup on clinic machine
        i. Need to work on connecting the two! Does LCM have to be reinstalled/built in a Docker container or can we use the executable on the C drive?
        ii. Next step: Set up LCM websocket server on clinic machine
    d. Kerry: Looking at code files in hard drive
        i. Didn't see the Jupyter notebook file relating to websocket servers?
12. LCM questions

Liaison Meeting Agenda

Wednesday, Oct 25th, 9:30am-10:30am

Agenda Items:

1. How did the Olin team access the actual stereo cameras?
2. Was the Unity version of the project updated?
    a. We were getting errors related to a mismatch in versions when trying to import prefabs from the Olin project into a higher-version project.
    b. Do they want us to use a more recent version of unity?
3. For Drew: what interfaces/data are the most useful for an experienced pilot?
4. What is on all the different screens? There are some toggleable views that we did not see during the site visit.

Liaison Meeting Agenda

Wednesday, Oct 11th, 9:30am-10:30am

Agenda Items:

1. Stereo camera: Stereolabs Zed mini
2. Why we are switching to Windows development
3. (site visit prep/info?)

Liaison Meeting Agenda

Wednesday, Oct 4th, 9:30am-10:30am

Agenda Items:

1. Emailed final SoW
2. Headset is here!
3. What is the FOV of the ROV?

Liaison Meeting Agenda

Wednesday, Sept 27th, 9:30am-10:30am

Agenda Items:

4. Headset is on the way!
5. What machine do you use for VR on the ship?
    a. Windows? Linux?
6. How do you handle paid assets on Unity?
    a. Should we purchase the CurvedUI asset?
7. What to bring for site visit?
    a. What type of clothing should we wear on the vessel?
    b. Any other gear we should bring with us?
8. SoW feedback sharing
    a. Deliverable schedule discussion

Liaison Meeting Agenda

Wednesday, Sept 13th, 9:30am-10:30am

Agenda Items:

1. Do you have thoughts or preferences about whether we should use Unity version control vs. Git version control + GitHub?
2. We are trying to decide between the Varjo Areo and the Meta Quest Pro. And we are leaning towards the Meta Quest Pro
    a. The Varjo has about 200 Hz eye tracking sampling frequency. But it is $2k not including two base stations and the controllers that we would get from Valve.
    b. The Meta Quest Pro does not list their sampling frequency, but some people have found it to be about 72 Hz. The eye tracking does not seem as good, but we can get all we need for $1k, and we think it will be good enough for our purposes.
3. Logo reminder
4. Slide with our prioritization of features
    a. Prioritization of Features

Liaison Meeting Agenda

Wednesday, Sept 13th, 9:30am-10:30am

Agenda Items:

1. We wanted to let you know some deadlines, we will be sending you a draft of our Statement of work on September 25th and based on your feedback we will send a final version on October 3rd.
2. Prioritization of features:
    a. Do you want us to make any modifications to the work/ features that have been already added to the XR systems? Or should we prioritize novel features? If they want changes to existing features, what should these look like?
    b. How would you prioritize potential new features?
    c. Any more that we should add to the below list?

New Features to Potentially Add (Based on the wish list in the Olin team's documentation)	**Priority Rating (1=high, 5=low)**		
	SH	EM	DB
Sampler Cone			
Make laser pointer more useable in 3D for the scientists			
"Target painting" and organism tracking (scientist makes annotations/paints an object, have an algorithm that tracks the object over time)			
Aggregating estimates of chemical/other density signals			
Adding depth information to the UI (did not seem to be finalized by the Olin team)			
Better placement and/or UI for the turns			
Displaying the delta information			
Update the heading information to make it more useable			
Be able to map a different sampler to the controller button			
Landmark points, waypoint projection within the headset			

Topological map, so that pilots can get a sense of what's behind them even without having the video. Could also project the sonar in there			

Liaison Meeting Agenda

Wednesday, Sept 6th, 9:30am-10:30am

Agenda Items:

1. First Site Visit!
    a. Sept 19th or Oct 19th
    b. What would the visit on those dates entail?
    c. Thoughts on half of the team making it one day and half of the team making it the other time?
2. Ordering VR headset
    a. Valve index
        i. Specific model?
3. Our Code
    a. Should our code be in the MBARI repo? Or should we have a separate GitHub repo (if so, can we get your GitHub info to share it with you?)
4. What documentation and publications should we prioritize looking at?
5. What work is currently being done in this space at MBARI? Has there been any development between 2021 (when most of the documentation seems to be from) and now?