901904 - Deep-Sea Coral Community Observatory

Week 51

1. Irene Hu
    a. Working on junction box board

Week 50

1. Irene Hu
    a. Laid out strobe board
    b. Started on remaining boards

Week 49

1. Irene Hu
    a. Working on Strobe board in KiCAD
2. Paul McGill
    a. Tracking down beacons for deployments next year

Week 48

1. Irene Hu
    a. Drawings submitted for ROV housings

Week 46

1. Irene Hu
    a. Edited drawings for ROV housings, talked to Ray about fab
    b. Discussed electronics with Paul, started thinking about LED board
2. Paul McGill
    a. Starting analysis of images from recently recovered Mega Coral Cam
3. Alana Sherman
    a. Our megacoral camera was recovered after a stressful period of time when it had been released but did not surface.
    b. On Monday I connected to the camera and was happy to find it had ~9500 images. It worked for 13 months at Sur Ridge and appears that there were not any significant technical issues. We are investigating whether the focus was set optimally for the scene. Also, for the first time, there was biofouling on the glass port of the camera.

Week 45

1. Irene Hu
    a. Getting started on boards
    b. Meeting w/ Paul
2. Paul McGill
    a. Worked on design for rescue float pack for Coral Mega Camera so it can be retrieved on Fri
3. Alana Sherman
    a. Providing support for Mega camera recovery

Week 44

1. Irene Hu
    a. Set up tub in seawater lab and ran some imaging tests
    b. Design review and meeting
2. Paul McGill
    a. Looked up lens specs for Aaron so we can design focus motor drive
    b. Attended review of Multi-spectral Camera system

Week 43

1. Irene Hu
    a. Imaged some feathers and leaves, refined image processing workflow

Week 42

1. Irene Hu
    a. Prep for design review
    b. Refined MATLAB code for processing images
    c. Obtained a giant tub
2. Paul McGill
    a. Read through review materials for upcoming

Week 41

1. Paul McGill
    a. Did some macro camera pixel size calculations for Steve L

Week 38

1. Irene Hu
    a. Glued velcro to Teflon piece

Week 37

1. Irene Hu
    a. Played with ImageJ
    b. Convo w/ Paul and Steve re: next steps; ordered some Teflon
2. Paul McGill
    a. Helped Alana write abstract for OSM 2024
3. Alana Sherman
    a. Wrote abstract for ASLO on camera tripods

Week 35

1. Irene Hu
    a. Planning meeting

Week 34

1. Irene Hu
    a. Timed operations in detail to understand where lags are/how to speed up
    b. Restructured Python code, modified firmware and camera settings to cut small delays

Week 31

1. Irene Hu
    a. Designed cradle for multispec, sent out for 3D printing
    b. Ordered parts to set up calibration / testing jig

Week 30

1. Irene Hu
    a. Finished building multispec instrument with nylon screws. Confirmed to work

Week 29

1. Irene Hu
    a. Finished building multispec lab unit after receiving parts; it no longer works and draws too much current
    b. Opened unit back up and traced problem to screws shorting two ground planes. Ordered nylon screws.

Week 28

1. Irene Hu
    a. Ordered some parts and began finishing Paul's build

Week 27

1. Irene Hu
    a. Wrote multithreading version of code- works better than ever

Week 26

1. Irene Hu
    a. Camera crashes traced to USB cable - Paul has now rewired and housed system
    b. Refinements to code for resizing image, saving, etc
    c. After discussing w/ Paul, writing second version of Python code using multithreading with producer/consumer architecture
2. Alana Sherman
    a. Tank tested Coral Macro: checked focal plane distance, aligned lasers, tested deep sea connect
    b. Packed for cruise
    c. Deployed system at Sur Ridge on June 27
    d. Started next mission, deployment was rushed due to bad conditions but system is working and looks like well positioned

Week 25

1. Paul McGill
    a. Preparing Coral Macro Camera for deployment next Tuesday. Did tank testing today and re-aimed lasers.
2. Alana Sherman
    a. The Coral Macro camera was recovered last week. I downloaded the images (>19k), which took over a day. The camera stopped one week before recovery but we discovered the cards on the camera filled up with images.
    b. Turning the camera around for deployment next week. Batteries have been changed, running tests and servicing the instrument. We will confirm focus in the tank today.

Week 24

1. Irene Hu
    a. Arbitrary pauses in camera's "continuous" mode traced to using synchronous instead of asynchronous capture; rewrote all code to use asynchronous
    b. Toggle between streaming (need to resize) and saving images from 8 LEDs - works (w/ workaround for crash when try to close streaming window)
2. Alana Sherman
    a. Macro coral cam coming back this week

Week 23

1. Irene Hu
    a. Working on continuous / streaming mode to help with setup and focus before taking pictures with all LEDs
    b. Signals are not behaving as expected, with arbitrary pauses that slow down refresh rate; exchanging emails with AlliedVision support team
    c. Draft Python code to toggle between streaming mode and 8-shot mode

Week 22

1. Irene Hu
    a. Setting up "streaming" version of camera as controlled by trigger pin on LED ring
        i. Read through camera manuals for timing information, will try FrameTriggerWait for controlling frame rate
        ii. Code written and tested for LED ring

Week 21

1. Irene Hu
    a. Set up LED ring to flash LED/camera pin on commands
    b. Set up camera to trigger on pulse, and tested w/ pulse gen
    c. Python script to communicate w/ LED ring, and coordinate, read, and display matching camera image
    d. Met w/ Paul to discuss next steps

Week 20

1. Irene Hu
    a. Code written for comms to LED ring
    b. Replaced resistors to increase voltage to LED current source regulator; troubleshot and fixed problem with digital pot; characterized new LED I-V points at a few pot settings and measurement durations

Week 19

1. Paul McGill
    a. Attended meeting to plan recovery of cameras from Sur Ridge.

Week 18

1. Irene Hu
    a. Read lots of camera manuals; mapped out a workflow for camera-cpu-LED ring
    b. Simple Python program to synchronously stream camera frames w/ varying exposure
    c. Started on LEDring code to interact with camera/cpu

Week 17

1. Irene Hu
    a. MATLAB model of LED outputs to compare relative intensity factoring in LED output curves, attenuation of water, and QE of detector; 940nm LED will need 100-1000X longer exposure than others, depending on distance to object
    b. Watched Paul configure a local user and python environment on laptop Harlequin
    c. Watched Paul set up & interface with camera over Vimba Viewer and python (some connections issues, some issues possibly Windows related)

Week 16

1. Irene Hu
    a. Implemented all-LED light source + handed to Francisco
    b. Measured I-V of LEDs, ordered resistors to modify input V to current source

Week 13

1. Paul McGill
    a. Edited Jim B's octopus garden paper.

Week 9

1. Paul McGill
    a. Attended kickoff meeting for the year where we rearranged some deployment dates.
2. Alana Sherman
    a. Met and set up schedule for recovery and macro camera turnaround

Week 5

1. Alana Sherman
    a. Reviewed battery capacity to determine next deployments

Week 1

1. Paul McGill
    a. Did calculations for size of field of view for Coral Mega Camera deployment on Sur Ridge