901904 - Deep-Sea Coral-Sponge Community Observatory

Week 51

1. Irene Hu
    a. Some modeling/visualization of LED strength and attenuation, check w/ Paul's calcs
    b. Ordered LEDs

Week 50

1. Irene Hu
    a. Meetings to discuss future of project

Week 49

1. Irene Hu
    a. Meeting to discuss future of project
2. Paul Roberts
    a. SWIR imaging design

Week 47

1. Paul Roberts
    a. SWIR camera scoping

Week 46

1. Irene Hu
    a. Call w/ John from EVT re: lens control issues after firmware update for camera; new firmware received and tested, works wonderfully and allows readout signal to be used

Week 45

1. Irene Hu
    a. Updated camera firmware which broke some things; trying to get eCapturePro to work
    b. Looked into image registration

Week 44

1. Irene Hu
    a. Went through second half of images from 10/7 dive to pick out in-focus views
    b. Exploring image correction for white balance, some strange results

Week 43

1. Irene Hu
    a. White balance analysis
    b. Starting to try correcting images for white balance

Week 42

1. Irene Hu
    a. Picked out images from 10/7 dive, preliminary processing to make RGB images
    b. Start white balance analysis

Week 41

1. Irene Hu
    a. Reviewed video from 9/23 cruise and made metadata
    b. Mob for cruise 10/4, Carson cruise on 10/7
    c. MIW poster

Week 40

1. Irene Hu
    a. Planning for MIW poster
2. Paul Roberts
    a. Preparing for Oct 7 / Oct 11 deployments
    b. MIW poster materials

Week 39

1. Paul Roberts
    a. Multispec deployments and data analysis

Week 38

1. Irene Hu
    a. Tank testing on 9/11 went well, no issues
    b. Deployment on 9/16 went well, lots of images
    c. Preliminary analysis of images
2. Thom Maughan
    a. Planktivore V1 frame and brackets are ready.
    b. Denis is working to finish the battery pack. Looks like it's about 83A-Hr.

3. Paul Roberts
    a. Multispec deployment and analysis
    b. MIW poster

Week 37

1. Irene Hu
    a. Everyone else worked hard and we are ready for tank tests
    b. Set up MATLAB on SPECTRAL to process images

Week 36

1. Irene Hu
    a. System testing as it gets built
2. Paul Roberts
    a. System assembly and testing for Sept. 16 deployment

Week 35

1. Irene Hu
    a. Tested some LED pucks, 2 out of 6 had issues
2. Paul Roberts
    a. MSCC assembly

Week 34

1. Irene Hu
    a. Further testing and enhancements of code; implemented LED flash sequence
    b. Got images off of camera software, preliminary data processing in MATLAB
    c. Wrote instructions sheet for running system on desktop
    d. Spent awhile trying to get second controller to work, but it is broken.
    e. Testing LED pucks as they are made

Week 33

1. Irene Hu
    a. Pressured tested UV tester puck- did not turn yellow even with current under pressure. Swapping UV LEDs on 12 pucks.
    b. Camera to controller connection set up, tested, and troubleshot (using camera software). Now works with a few small issues
    c. Set up desktop computer with necessary software
    d. Wiring diagrams

Week 32

1. Irene Hu

    a. Code updated to incorporate camera, camera connector ordered
2. Thom Maughan
    a. Working deployment prep, see notes under Planktivore

Week 31

1. Irene Hu
    a. Code tested and functional for controlling jbox and other basic controller functions
    b. UDP working for ethernet comms with controller; code updated to pass through commands over UDP. Working on final troubleshooting
    c. UV tester LED puck assembled, spectra measured

Week 30

1. Irene Hu
    a. Hacked a connector for JTAG. With help from Paul and Rich, uploaded a bootloader and was able to upload code
    b. Two controller boards have different issues related to power control of camera
2. Paul Roberts
    a. Planning for Sept engineering tests

Week 29

1. Irene Hu
    a. Troubleshooting power on second jbox board; after some back and forth, it now also works, though unclear why (same as first board)
    b. Test of jbox with 10 pucks connected. One puck had LEDs always on, traced to a bad solder joint
    c. Working out mods on controller board to allow stacking

Week 28

1. Irene Hu
    a. Continued troubleshooting of puck board using logic analyzer, several possibly related issues identified. Some issues seem related to quirks of the demultiplexer
2. Thom Maughan
    a. Proposal discussions

Week 27

1. Irene Hu
    a. Board turns on (not sure what has changed) but puck behavior erratic
    b. Tests with new optopolymer target; made new color filter, quantified intensities from lab multispec, spectrometer tests, compiled into graphs
    c. Characterized spectral shift in pressure treated 370nm LED

2. Paul McGill
    a. Got laser cable tested, rebuilt, tested again, and fabricated
    b. Preparing
3. Paul Roberts
    a. Phase 1 proposal
    b. ROV camera fabrication planning

Week 26

1. Irene Hu
    a. Spectrometer tests with color target
    b. Jbox board troubleshooting - mux behavior is unexpected but ok, troubleshooting continues
2. Paul McGill
    a. Installed and tested focus motor system with Aaron S and Alana
    b. Got new laser housing schematic drawn for fab by techs
    c. Set up second laptop with disco account and all required apps
3. Alana Sherman
    a. Spent a lot of time with Paul and Aaron exploring the potential of the focus stage motor
    b. Also explored using the remote software control of the focus, but this puts the camera in a state that might not be reliably repeatable enough to use during deployment

Week 25

1. Irene Hu
    a. Made color target and ran tests with benchtop system (Spectralon vs Teflon, and color targets)
    b. Set up electronics for puck pressure test, ran test w/ Aaron
    c. Testing of jbox board - various circuit issues
2. Paul McGill
    a. Working with Alana and Aaron S on lens focussing
    b. Trying to incorporate limit switches into stepper motor driver
3. Alana Sherman
    a. Ran a bunch of tests with the Canon R6 to determine whether we could use the remote software to focus the camera. This seemed to work but is sensitive to exact conditions- which are not well defined. So we are back to using the mechanical approach, which still requires integration and testing.

Week 24

1. Irene Hu
    a. Picked colors for target
    b. Circuit and code to test jbox board

Week 23

1. Irene Hu
    a. Cleaned up bitbucket repos and readme files
    b. Boards are here, given to Jose for soldering
2. Paul McGill
    a. Helped Alana and Jim B. with their DOEST presentation

Week 22

1. Irene Hu
    a. Code for serial command interface communications with new boards
    b. Discussions and ordering of targets for imaging
2. Paul McGill
    a. Did further testing of focus stepper motor driver, and can now operate it through VirtualHere running on the Raspberry Pi
3. Paul Roberts
    a. multispec targets

Week 21

1. Irene Hu
    a. Circuit boards sent out for fab, back and forth re: various issues
    b. Reviewing some existing code
2. Paul McGill
    a. Got Raspberry Pi set up with latest operating system for testing
    b. Got focus motor controller turning the motor with laptop app
3. Paul Roberts
    a. Planning for proposal
4. Alana Sherman
    a. Working on a talk for DOEST

Week 20

1. Paul McGill
    a. Ordered focus stepper motor drivers. Working out wiring and connectors to connect focus stepper motor to driver board
2. Alana Sherman
    a. Helping as needed with small details on the

Week 18

1. Irene Hu
    a. Jbox and Controller PCBs sent out to PCBway for fab
    b. Various small tasks (generate PCB model, code discussion, send Steve some data processing stuff)

Week 17

1. Irene Hu
    a. Fixes and edits to board schematics following layout
    b. Continue implementing code

Week 16

1. Irene Hu
    a. Code for controlling jbox
    b. Edits to jbox schematic to address issues identified while writing code
    c. Work w/ Jose on board layouts
    d. Cable/harness diagram for strobe pucks

Week 15

1. Irene Hu
    a. Discussion with Paul re: how to set up board files in code

Week 14

1. Irene Hu
    a. ROV firmware moved to bitbucket; board json
    b. Read camera documentation and updated controller schematic to add extra lines for camera output and iso ground
    c. Checked two new LED pucks delivered by Jim; some soldering issues, resolved and passed on to Aaron

Week 13

1. Irene Hu
    a. Finished updating boards, sent out for layout
    b. Ported previous code to bitbucket
    c. Starting to write ROV firmware

Week 12

1. Irene Hu
    a. Continuing to update boards and make mods
    b. Strobe puck rB sent for assembly
2. Paul Roberts
    a. ROV camera chassis and control PCB fitment

Week 11

1. Irene Hu
    a. Continue fixing up schematic

2. Paul Roberts
    a. Fiber camera testing
    b. Closeup lens testing
3. Alana Sherman
    a. Put together list of tasks for redeploying Smith tripods for Jim B. Going to bring the cameras back for a closer look.

Week 10

1. Irene Hu
    a. Making some changes to schematic based on design review
    b. Had Kevin set up DISCO project in bitbucket
2. Paul Roberts
    a. Camera computer setup

Week 9

1. Irene Hu
    a. Finished troubleshooting pucks (half the LEDs have flipped pinout)
    b. Started setting up and organizing software environment
    c. Electronics design review
2. Paul McGill
    a. Attended Irene's design review
3. Paul Roberts
    a. Topside camera computer setup
    b. Electrical design review

Week 8

1. Irene Hu
    a. Testing and troubleshooting of pucks. Got transistor pinout wrong (fixed), half the LEDs are not turning on

Week 7

1. Irene Hu
    a. Building circuit and writing code to test pucks
    b. Wrote code for stacked tiffs for multispec, tested on optical target
2. Paul McGill
    a. Reviewed some of the 20,000 images from the just-recovered Coral Macro Cam.

Week 6

1. Irene Hu
    a. Divided control board into two boards. Solidworks mockup incorporated/approved by Aaron. Split nets on schematic, added connectors, reorganized schematic

    b. Materials sent out for design review
2. Paul Roberts
    a. Setting up camera capture PC
3. Alana Sherman
    a. Working on poster for ASLO

Week 5

1. Irene Hu
    a. Finished controller board, prepping materials for design review
    b. Discussed w/ Aaron and need to split controller board into two
2. Paul Roberts
    a. Weekly meeting and data format discussion

Week 4

1. Irene Hu
    a. Finished fixing jbox board, back to controller board
    b. Making model of controller board mockup to help with internal chassis design
2. Thom Maughan
    a. Prelim planning, Steve is indicating Fall deployment.
3. Paul McGill
    a. Locating camera tripod parts so they can be reassembled and deployed
4. Paul Roberts
    a. Mechanical modeling for ROV camera
    b. Review of electrical design
5. Alana Sherman
    a. Met to discuss plans this year for 3 time-lapse systems and a couple upgrades

Week 3

1. Irene Hu
    a. Working on controller board and fixing jbox board
2. Paul McGill
    a. Repaired WABO Iridium beacon and will now test outdoors
3. Paul Roberts
    a. Internal mechanical mounting
    b. Camera testing

Week 2

1. Irene Hu
    a. Basic ethernet comms working between Maduino (Arduino) and computer (Python)
    b. Progress on controller board - adapting from SINKER controller
    c. More minor fixes to jbox

Week 1

1. Irene Hu
    a. Experimenting with Maduino
    b. Small edits to clean up jbox board
2. Paul Roberts
    a. Multispectral ROV camera electronics