

Engineering Weekly Report 7/13/2023 - 7/20/2023

<https://docs.mbari.org/internal/projects/Engineering/Weeklies/2023/>

Executive Council Notes

- Eric Martin presented a talk, *“Bringing the Lab Into the Ocean: Designing Scientific Robotic Vehicles”*, as part of the UCSC COSMOS Discovery Lectures, to an audience of high school STEM camp and the broader university community, Tuesday July 18th.

Individual Activities

- Michael Anderson
- Kevin Barnard
 - 500055 - VARS, M3/RS, DSG
 - Implementing several features requested by VL into VARS GridView
 - 902204 - Scalable Robotics
 - Revisiting tasks related to GIM WP-1 for visual SLAM
 - Issues with loop closure/feature association
 - Long-survey performance
 - Multi-session capabilities of RTAB-Map
 - DQ2209 - Ocean AI 2
 - Hosted OVAI-PWG discussions
 - Started migration of model zoo to Hugging Face
- Francois Cazenave
 - 901221 - Midwater Time Series
 - Working on tow test
 - 901405 - PowerBuoy Development
 - Monitoring buoy
 - Building buoy stand extension
 - 902106 - Niobicon-Based AUV Docking Development
 - Assembling charge rod
 - Design bracketry for Chiton LRAUV
- Danelle Cline
 - 500055 - VARS, M3/RS, DSG.
 - Working on a rapid prototype of a video ML endpoint
 - Working on cluster similarity sort in vars-gridview to accelerate ML proposal corrections
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Finalized baseline i2MAP data: 80K localizations and 70 classes in CIFAR, COCO, VOC, and YOLO formats for various experiments
 - 901502 - Passive Acoustic Sensing
 - Continued support to run tests alongside on-premise tests using AWS CDK stack with AWS Batch with Fargate provisioning. So far, so good. The team is nearing finalizing the workflow, which supports running up to 256 days at a time in AWS.
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Weekly meetings and project proposal
 - Loading the last 4 missions; need to schedule label training and work on label taxonomy

- 902204 - Scalable Robotics
 - Proposal and project discussions with Eric. Hoping to join the next sprint to ramp up on cloud tasks in a few weeks.
- Overhead
 - Summer intern mentoring
 - Discussions on 2024 projects
- Duane Edgington
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Continuing work on detectors/trackers. Starting to train models for several detectors to compare/contrast including yolov8 and Vit
 - 901502 - Passive Acoustic Sensing
 - Team meeting
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Team meeting
 - Out of Office
 - July 23-July 29 2023. ICML (virtual). HST (UTC-10)
 - Oct 16-18 2023. Pytorch conference. SFO (in person). PDT (UTC-7)
- Jon Erickson
 - 901217 - Chemical Sensor Program
 - Rev'd the ISUS-APEX yet again. Pressure testing the carbon tubes.
 - 901805 - Coastal Biogeochemical Sensing Program
 - Waiting on the endcaps from the shop for 1000m duraFET.
 - Successful pressure test of cases.
 - 902004 - Planktivore
 - Finished the Nose shell design, in fab.
 - 902010 - Mesopelagic LRAUV
 - Drafting for parts. Drop Weight, tail assembly.
- Kevin Gomes
 - Overhead
 - Reviewing proposals. SE-IE is very oversubscribed so there is lots of work to do.
 - More screenings and interviews for MiniROV/EE candidate
 - Out of Office
 - July 5-7: Vacation
 - Aug 28-Sep 12: Vacation
- Andy Hamilton
- Kent Headley
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Working w/ Rob to complete integration of mb-system TRN into the Dorado AUV simulation
 - 901101 - Seafloor Mapping
 - Updates to debug output library (development for post-axial cruise); simpler, more intuitive API, thread-safe
 - 902204 - Scalable Robotics
 - Added socket input to mb12x, enabling real-time streaming of sonar data via mb-system to LCM for SLAM. Refactored mb12x, decomposing some functions for better modularity.
 - Overhead
 - Proposals, labor spreadsheet prep, meetings
 - Hiring: meeting with committee on next steps
 - Meeting w CEO search committee, AOSE search input
 - Out of Office
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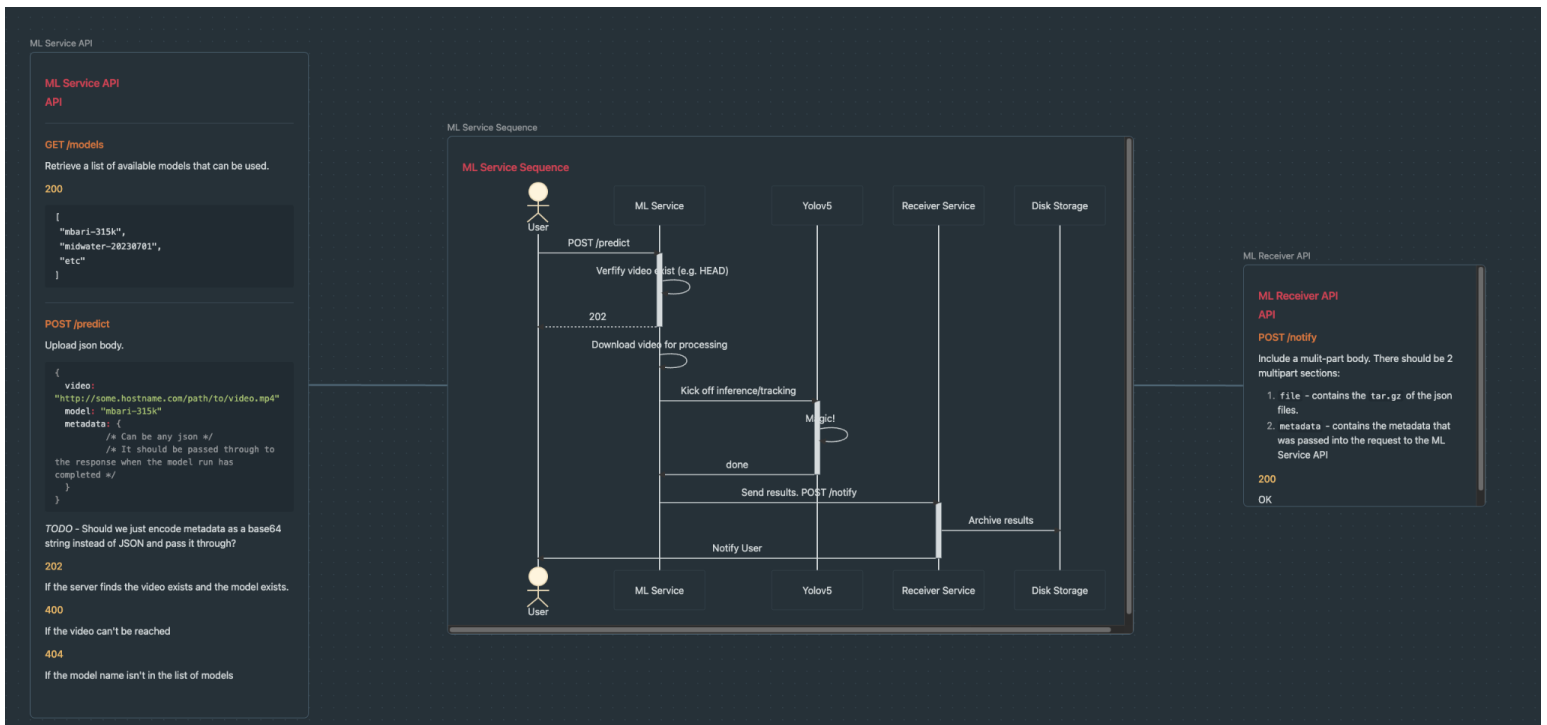
- Rich Henthorn
 - 300078 - DMO Divisional Support - AUV
 - Refinements to configuration file loading
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Dorado simulation with mbtrnpp
 - 901405 - PowerBuoy Development
 - Ocean Energy Webinar
 - 902305 - Event Detection using the Sedimentation Event Sensor
 - Modifications for periodic SES reference measurement
 - Refinements to data processing SES on MARS
 - Overhead
 - Rec Com
 - HR
 - Out of Office
 - July 19: WFH, available on all, PDT timezone
 - July 24 - 27: Vacation: available on email, EDT timezone
 - July 31 - Aug 4: WFH: available on all, PDT timezone
- Brett Hobson
- Irene Hu
 - 901805 - Coastal Biogeochemical Sensing Program
 - Completed EC mockup build
 - Worked w/ Jose to rewire some connections in nanofet for better routing
 - Making Tadiran battery adaptor board
 - Wirewalker/Humboldt meeting
 - 901904 - Deep-Sea Coral Community Observatory
 - Finished building multispec lab unit after receiving parts; it no longer works and draws too much current
 - Opened unit back up and traced problem to screws shorting two ground planes. Ordered nylon screws.
- Scott Jensen
 - 771131 - Great Lakes PCM/HAB
 - Preparing for full up thermal chamber testing
 - 901205 - ESP SURF Center
 - Preparing for filtering experiment
 - Developing filtering protocol
 - 901405 - PowerBuoy Development
 - Meetings about battery system development
 - Out of Office
 - Vacation July 24-28
 - Vacation Aug 28- sept 1
- Brent Jones
- Chad Kecy
 - Out of Office
 - Out of office on Fridays
- Brian Kieft
 - 300083 - DMO Divisional Support - LRAUV
 - Supported Pontus deployment this past week/weekend
 - 901513 - Targeted Sampling by AUVs
 - Discussed lessons learned from Muskegon oil spill testing.
 - 902101 - LRAUV Technology Development and Fleet Operations

- Working with WHOI to support their upcoming cruise. New missions and work on the strobe/camera system
 - 902102 - Multi-LRAUV Simulation Environment
 - Sim is broken. Fixed netcdf file wget issue but need to deal with gazebo plugin path issue on the docker side now.
 - Out of Office
 - 07/18 - 07/21 (MST)
 - 08/03 - 08/07 (EDT)
 - 08/14 - 08/18 (PDT)
 - 08/16 - 08/19 (EDT) alternate
 - 09/26 - 10/04 (EDT)
- Denis Klimov
 - 901112 - Monterey Bay Time Series
 - The IFCB pumps had been refurbished at McLane. Turned out, one of the motors did not just come out of alignment, but actually failed. McLane is shipping back the refurbished pumps as well as the failed motor for a post-mortem.
 - 901809 - Deep Sea Bioinspiration
 - Working on an Open House layout.
 - Overhead
 - The B232 lab reconfig is well underway. This week, we are completing new shelving in the curtain area, and starting setting counters. Also the issue of horn-strobe fire alarm location is close to being resolved: we are looking at the relocation of a horn-strobe into the center of the lab; and install additional strobe only (no horn) in the curtain area.
- Eric Martin
 - 901101 - Seafloor Mapping
 - Prepping for next week's 3D at Depth visit
 - 901206 - Coastal Profiling Float
 - Changeset for next tank test
 - 901911 - ROVVR
 - Intern support
 - 902012 - Telepresence
 - Paper edits continue.
 - Tested fulltime streaming via Wowza from the RC using starlink and OBS.
 - 902204 - Scalable Robotics
 - Sprint kickoff
 - minirov sled initial design.
 - Paragon ASV part ordering.
 - Out of Office
 - on vacation 8/1-8/6
- Thom Maughan
 - 300083 - DMO Divisional Support - LRAUV
 - LRAUV BatMan controller firmware. In progress on implementing smbus functions. Board bringup on baseboard is done and charging daughter boards will be tested after smbus functions for charge monitoring are working.
 - 901009 - CANON
 - Met with Kobun on the eDNA server software and plans. First implementation will mirror the MBON server.
 - 901805 - Coastal Biogeochemical Sensing Program
 - Met with Yui on near term plans. BEAMS firmware worked well on the recent Maui deployment.

- 902004 - Planktivore
 - Project management, budget, one on one meetings to discuss plans.
 - LRAUV nose shell is delayed. Elkhorn is indicating 'next week'.
 - Met with Brett regarding Ahi.
 - Prep'd Planktivore V1 for Durkin lab deployment on 7/19. Next step is data processing.
 - Pressure test for Planktivore V1 and V2 schedule is in place for Aug 8,9.
 - Prep for 'Club Plankton' booth at open house.
- Overhead
 - Proposal was finished and submitted. Many thanks to Paul Roberts.
- Out of Office
 - Vacation June 26 - July 12 Vacation / Elder care
 - Vacation Sep 24 - Oct 2 Vacation
- Mike McCann
 - 901009 - CANON
 - Mentoring capstone students – one team is doing so well I had to order new STOQS mugs
 - 901910 - Plankton Taxonomic Groups from AUVs
 - Adding additional QC for occasionally bad dorado parosci data from 2008 to 2012
 - Overhead
 - Placed order for computer upgrade
 - Out of Office
 - 18 July: Vacation
 - 7-11 August: SIGGRAPH in LA
 - 12-20 September: Vacation
 - 9-11 October: Web3D 2023 Conference
- Rob McEwen
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Completed first pass at adding mbtrnpp to the simulator. It's working.
 - Second pass will eliminate duplicated code and unnecessary computations.
 - Found long-standing bug in Attributes class.
 - Out of Office
 - First two weeks of August.
- Paul McGill
 - 300070 - DMO Divisional Support - Ventana
 - Have revived the ground fault channel isolator project, doing some circuit analysis
 - 901618 - Pelagic-Benthic Coupling
 - Made Rover poster for Open House, dealing with Open House logistics
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Investigating how to test ground station antenna servos without using Pixhawk
 - Planning Friday's flight at Terrace Point with Tom O.
 - 902304 - Piscivore Cam
 - Made major progress on next revision of camera controller code.
 - Reviewed video from most recent deployment. We got good stuff!
- Enoch Nicholson
 - 706008 - READI-net
 - Completed instrument layout for October prototype.
 - Provided mechanical update to SURF Center.
 - Received design buy in from manufacturing.
 - Purchased COTS mechanical components.
 - 902306 - SINKER
 - Completed aquarium cart.

- Tom O'Reilly
- Mike Risi
 - Out of Office
 - Out of office on Fridays
 - May 30 - June 6
- Paul Roberts
 - 902001 - Ventata 4k camera
 - Supporting deployments
 - 902111 - Carbon Flux Ecology
 - Making mosaics of SES images
 - 902204 - Scalable Robotics
 - PoE interface can solid modeling
 - Printing April tags
 - 902306 - SINKER
 - Preparations for design review
 - Testing cameras and lenses
 - Overhead
 - Poster and materials for open house
- Brent Roman
 - 708165 - MERHAB19:ESP
 - Helping NWFSC diagnose ESP syringe failures.
 - Monitoring long running deployment off La Push
 - 708175.50 - SURF task
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 - 771131 - Great Lakes PCM/HAB
 - Tweaking Honu's configuration in preparation for next month's deployments
 - 901205 - ESP SURF Center
 - Added shared, non-volatile command history to espclients
 - Measured 3G ESP pump control instabilities
 - Added derivative control to pressure pump motor servo in attempt to address them
 - Began testing to measure effectiveness (or lack thereof :-)
 - 901913 - Wet Wifi
 - Preparing to use modem deck box with LRAUV in test tank
 - DQ2210 - READI-net
 - Attended meeting on mechanical design
 - Out of Office
 - May 26 - June 6
- Carlos Rueda
 - Out of Office
 - July 5–7, 15: vacation
 - August 9–28: vacation
- Karen Salamy
 - Out of Office
 - On-campus 3 days/week (**M, T, Th**).
- Brian Schlining
 - 500055 - VARS, M3/RS, DSG
 - Continuing investigation of subtle framegrab/bounding box misalignments from different framecapture methods at mbari-org/vars-feedback#56.

- We continue to be plagued by slow 4k framecapture on ships. Investigating at <https://github.com/mbari-org/vars-feedback/issues/58>.
- Proposed a spec for very simple web services to process video files using yolov5.



- 902002 - FathomNet
 - Met w/ [Magda Balazinska](#) to discuss their ML assisted video search research. Assembled a dataset of MBARI video and annotations for her students to test with.
- 902304 - Piscivore Cam
 - Set up applications that automate [moving/renaming piscivore files](#) from atlas:/M3_Staging to [titan:/M3/Projects/Piscivore](#) and [registering them](#) in MBARI's [video asset manager](#).
- Out of Office
 - Jul 28 - Aug 6 - Vacation
 - Aug 14 - 17 - Vacation
 - Aug 21 - 22 - Vacation
- Alana Sherman
 - Out of Office
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- George Stern