

Engineering Weekly Report 11/25/2021 - 12/2/2021

Executive Council Notes

- 902106 Niobicon AUV Dock Development - This project is in full swing this week with tests offshore and final assembly of the dock mooring in the high bay. LRAUV Tethys has been docking to a test mooring while Brian and Ben refine the acoustic homing and dock latching software. Francois, James, Johnny, Aaron, Paul and of course Jose, have been assembling and wiring up the dock mooring as we get ready for full system testing beginning next week.

Individual Activities

- Kevin Barnard
 - 902002 - Fathomnet Detect and Classify
 - Wrote tool to generate custom ML training datasets from FathomNet data: fathomnet-generate
 - Working on feature requests to the VARS integration of gridview
 - 902005 - VARS Annotation Assistance
 - Updated YOLOv5 training documentation
 - Investigating GCP Video Intelligence API for analysis of underwater video
 - Started porting the sharktopoda client library to Python -> will help with integration of BoxJelly and Cthulhu
- Francois Cazenave
 - 901405 - Wave-Energy Conversion for Oceanographic Applications
 - Sent oil sample for analysis
 - 902106 - Niobicon-Based AUV Docking Development
 - Assembling buoy
- Mark Chaffey
- Danelle Cline
 - 901502 - Passive Acoustic Sensing
 - Looked at AWS S3 storage lens results for monitoring open data use. Free tier has limitations, however, so may need to upgrade for more detailed reporting. .022 cents per GB.
 - Running clusterGAN model sweeps on blue D calls to separate training data by pose
 - Waiting for blue A call detections to finish to run batch classification; AWS Batch queues are setup and ready to go
 - EMSO participant follow-up discussion on potential CNN model/training data sharing
 - 902005 - VARS Annotation Assistance
 - Mtg planned with AWS Principal Enterprise Strategist on the nonprofits team to discuss alternative funding / support options, models, data formats, and our ML roadmap.
 - Deployed changes to deepsea-ai database server with added video process ARN and some refactoring of tables. Docs on [queries](#) and [mutations](#) updated.
 - YOLOv5 model testing on A100 for distributed training. Newest code release needs to be integrated into deepsea-yolov5 for full support.
 - Upgraded to OpenCV 4.5, CUDA 11.3.1, and minor tracking bug fixes to handle small objects exceptions in deepsea-video-track pipeline processing. CSRT tracker performs better than KCF for benthic video, but it is slower ~15-20 FPS.
 - Overhead
 - AWS Reinvent conference

- Out of Office
 - Vacation 11/23-11/26
- Duane Edgington
 - Out of Office
 - Nov. 3 - Dec 6. Vacation (foreign travel)
- Jon Erickson
- Ben Erwin
- Kevin Gomes
 - 300062 - DMO Support Doc Ricketts
 - More dataprobe updates. Changed dataprobe so that it reads the font size from the JSON config and sizes everything based on that. Also fixed one bug and implemented improvements requested by pilots
 - 902100 - Telepresence on MBARI Research Vessels
 - Starting work on VueJS based application (Auth through Slack, Zoom meeting and integration of Eric's services)
 - Overhead
 - EOY budgets
 - Labor hours shuffling
 - Out of Office
 - 12/9 Vacation - Volunteer at Tech Fest day at Bay View Academy
- Andy Hamilton
- Kent Headley
 - 300057 - Mooring Maintenance
 - Helping Francisco track down OASIS4 documentation
 - 902005 - VARS Annotation Assistance
 - Fixed some memory leaks, added some new features
 - Working on documentation for the frame grab server and client
 - Brian S is prepping for integration and test
 - Overhead
 - OASIS support for Cawthron
 - Misc admin
- Rich Henthorn
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - CoNav logging
 - CoNav computations
 - 902101 - LRAUV Technology Development and Fleet Operations
 - CoNav application
 - CoNav computations
 - Out of Office
 - Dec 17 - 31, Holidays and vacation
- Brett Hobson
- Scott Jensen
 - 901205 - ESP SURF Center
 - Work on sampling technique
 - 901805 - Coastal Biogeochemical Sensing
 - Discussion and considerations of temperature drifts
 - Overhead
 - EE Hire
 - Out of Office
 - Vacation

- Brent Jones
- Chad Keczy
- Brian Kieft
 - Out of Office
 - 11/22-25 (MST)
- Denis Klimov
- Diana LaScala-Gruenewald
 - Out of Office
 - Out sick last Friday (11/12)
- Eric Martin
- Thom Maughan
 - Out of Office
 - Working from home once a month on Wednesday (child/school) (Nov 3, Dec 1)
 - Nov. 10,11,12 Vacation in Dallas, TX
- Mike McCann
 - 901111 - AUV Infrastructure Support
 - Processed data from Gulper mission 2021.334.00
 - 901221 - Midwater Time Series
 - Working on align.py script to have all calibrated data available at original sampling rates along with corrected and interpolated coordinate information
 - Overhead
 - Installed Activestate Perl so that I can run the Expedition database loads
 - Helped try and diagnose data links following the correction of Ventana dive times from 2016
- Rob McEwen
 - 600034 - Precision Control Technologies for ROVs and AUVs
 - Reviewing Adam's Matlab code for cooperative navigation and simulation.
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - Building next UAV, Believer #3.
 - 902101 - LRAUV Technology Development and Fleet Operations
 - Trying to track down why Triton's pendulum sonar rig doesn't point down during yoyos.
 - Out of Office
 - Dec 22-31
- Paul McGill
 - 300070 - DMO Support Ventana
 - First powerup of new channel isolator board for ground fault system. Jose and I found some issues that we're working on.
 - 701145 - Penguin Hotspots
 - Much progress on REMUS sonar payload schematics.
 - 901618 - Pelagic-Benthic Coupling
 - Preparing for Jan cruise of unknown data.
 - 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Worked with Alana and Aaron to get Coral Macro Cam ready for Barry cruise leaving Thu morning. Alana and I will support deployment through telepresence.
 - Out of Office
 - Medical appointment Tue morning
- Ed Mellinger
- Tom O'Reilly
 - 300082 - DMO Support - Wave Glider
 - Working with Chris Wahl to prepare new Wave Glider sensor management computer (SMC) for deployment, new LRAUV tracking application developed by Carlos Rueda

- 901101 - Seafloor Mapping
 - Working with Dave Caress and Kent Headley to refine MB-System 'cmake' build scripts and procedures. cmake builds are significantly easier to specify and maintain than the older 'auto-tools' approach currently used by MB-System
- 902101 - LRAUV Technology Development and Fleet Operations
 - Extending acoustic comm system such that larger files (e.g. camera images) can be transmitted, e.g. to Wave Glider 'Hot Spot'
- Craig Okuda
 - Out of Office
 - Vacation days
- Doug Pargett
 - Out of Office
 - Sick Leave
- Ben Raanan
 - Out of Office
 - June 8-22
- Mike Risi
 - Out of Office
 - April 26-30: Ocean Imaging Cruise
 - May 3-7: Vacation
 - June 4-11: Vacation
 - June 28-July 2: Vacation
 - August 30-September 14: Ocean Imaging Cruise
 - September 14-17: Vacation
 - November 22-24: Vacation
 - Vacation on alternate Fridays
- Paul Roberts
- Brent Roman
 - 901205 - ESP SURF Center
 - Started refactoring ESP core elf code in preparation for adding in-situ programming capability
 - Supporting ongoing deployments / lab work at GLERL and WHOI
 - 901913 - Demonstrating high-speed communication with a submerged AUV
 - Transferred @10kB/s within the test tank between two laptops alongside
 - Kudos to James McClure for quickly potting cables from Brett Hobson's drawings
 - Verified with Chris Wahl that Waveglider modem cable is properly wired and ready to pot.
- Carlos Rueda
 - 901009 - CANON
 - Reviewing MXM stuff in general: lots of library updates, code cleanup, reenabling local (non-dockerized) execution to facilitate development, setting up Github actions not only for regular CI (testing), but also to generate and publish the docker image.
 - 901513 - Targeted Sampling by AUVs
 - It turns out it is not python 3.6 but 3.4 that is available on the target SMC2 system. So, I did some assessment in terms of impacted libraries. Tom will look again into trying to enable 3.6. Otherwise, some non trivial changes would be required.
 - 902009 - AUV UI
 - Various exchanges in the UX channel to provide requested information about Dash, as well as adjustments done in the system itself arising from suggestions.
 - 902101 - LRAUV Technology Development and Fleet Operations
 - Some monitoring of ongoing vehicle deployments.

- Dash is now [4.8.3](#), with improvements and fixes, as well as specific additions toward our goal of decommissioning the legacy UI early next year.
- Overhead
 - Hotspot acoustic relay meeting with Tom and Iván.
 - Attended ACM Tech talk: The Essence of Software.
 - Exploring Rust and Scala technologies to build GraphQL and REST services.
 - Dealing with various issues arising after the migration of mmisw.org.
- Out of Office
 - Nov 11, 12, 22–24; Dec 9, 10, 21–31: vacation
- Karen Salamy
 - 300057 - Mooring Maintenance
 - Weekly maintenance and data checks.
 - 901101 - Seafloor Mapping
 - Finalizing the addition of the new SMDB image logo that I created for the project (Jenny and David C. both appear to like it).



- Working to get a ESRI bathymetric Ocean map onto the Data Base map page. Testing out some layer overlay issues.
- Overhead
 - Looking into an issue with the EXPD for Megan Bassett where she is unable to consistently add tapes to the database.
 - Created and processed MathCad, Aldec and Mathworks annual license maintenance and renewals for the 2022 year.
- Out of Office
 - Vacation: December 22, 2021 - January 4, 2022.
- Brian Schlining
 - 500055 - Video Annotation DM
 - Integrated [libbmagic](#) into [VARS](#) as the new framecapture mechanism for real-time annotations.
 - Upgraded all VARS [services](#) to Java 17. Added health endpoints to all services. (e.g. <http://m3.shore.mbari.org/anno/v1/health>). The upgrade introduced a bug into the [vars-user-server](#) related to how parameters in URLs are escaped. A [fix is in the works](#)
 - Created a configuration and secret management server for M3. This will allow Brian to build a single binary of each VARS apps that could be deployed on the ships or shore, and users just point the app at the appropriate config server. <https://github.com/mbari-media-management/raziel>
 - Working with IS about space issues on Titan.
 - 902002 - Fathomnet Detect and Classify
 - Meeting with various potential external stakeholders

- Overhead
 - Coordinating with [DARC](#) on upgrading their VARS system to the latest version.
- Rich Schramm
- Alana Sherman
 - Out of Office
 - Out early Monday for a dr appt