

George Stern Sorted By Project

300078 - Dorado AUV Thruster

- Began to scope effort (Week 38)
- Began reviewing requirements and current status (Week 40)
- Reviewed STM motor shield and identified possible alternative solutions to reduce board size (Week 41)
- Low rpm motor search (Week 42)
- Began reading datasheets/finding parts and updating architecture (Week 48)

706008 - (READI-net)

- Tested first 5 antennas from new PCBWay lot (Week 4)
- Started reader antenna tuning (Week 5)
- Completed reader antenna tuning - Scott says it works! (Week 6)
- Verified compatibility of proposed and existing NFC chips and began transferring design from kicad to cadence (Week 34)
- Completed handoff of tag NFC kicad project to layout team (Week 35)
- NFC antenna gerber review (Week 37)
- Tested and began troubleshooting new puck boards; antenna resonance is ~1.2MHz off from desired frequency and issue appears to be the chip - additional testing is needed. (Week 40)
- Retuned antenna for new NFC IC (Week 41)
- Puck Antenna retuning and antenna PO (Week 42)
- Tested the re-tuned antenna PWB - it works (Week 43)
- Discovered china is very competitive on cost but lead time to get ICs is prohibitive. Identified a few additional low cost fabs but Indtec remains competitive. (Week 43)
- Lot of spinning to try to find alternative cheap/fast pcba supplier for pucks; in the end Indtec seemed best due to board shape and singulation capabilities. Still trying to find the mexican assembly houses the auto industry is using to avoid tariffs. (Week 44)
- Tested random sample of Indtec puck antennas before they assembled to reduce lot risk (Week 46)
- Puck assembly supplier meeting (Week 46)
- Verified resonant frequency on all 300 puck boards and began identifying a faster test methodology which could be used for the next build. (Week 48)

902204 - Scalable Robotics

- Focused P3 cameras (Week 4)
- Took camera calibration dataset (Week 5)
- Created a few different calibration targets (Week 5)

- P3 testing on the paragon (Week 6)
- Added heat pipe to reduce roof lidar temperature (Week 6)
- RTK driver debugging, configuration/initialization changes (Week 6)
- Final P3 dataset gathered on the Paragon (Week 8)
- Lidar to Camera Calibration dataset gathered (Week 8)
- Completed As Built documentation (Week 8)
- Began work on Mola fixturing design (Week 10)
- Reverse engineering mola ESC interface (Week 11)
- Identifying alternate SBCs and control architecture to reduce motor cmd latency (Week 11)
- Mola upgrades/maintenance (Week 11)
- Completed Mola maintenance (Week 12)
- Architecture planning for Mola changes (Week 12)
- Mola reverse engineering (Week 14)
- Active buoyancy control research (Week 14)
- ESC control/Ardupilot rehosting research (Week 14)
- Camera sensor research (Week 14)
- Mola fixturing concepts (Week 15)
- Mola fixturing designs for lights, Orin, and IMUs (Week 16)
- Ordered Orin and peripherals (Week 16)
- Swapped Orin modules configured new SSD with jetpack 6 (Week 17)
- Mola dual IMU fixturing completed (Week 17)
- Started fixturing for Mola Orin NX/Nano (Week 17)
- Completed Orin Nano/NX adapter fixturing design and fabrication (Week 19)
- Updated camera rack design so mola lights could be added and point down (Week 19)
- Identified camera sensor options for Mola 2 (Week 19)
- Some mola updates (Week 21)
- Mola network troubleshooting (Week 22)
- Updated the DVL so it could be controlled by mola controllers or Orin NX (Week 25)
- Began scoping addition of CTD to mola (Week 25)
- Began planning for additional mola lighting (Week 25)
- Identified new higher temp led optical potting compound for lights (Week 26)
- Completed preliminary mechanical and electrical concept diagram for lights (Week 26)
- Scoped the CTD (Week 26)
- Fixed broken bulkhead and worked on an anode for the sonar (Week 27)
- Began detailed design for CTD and lights (Week 27)
- Detailed design of CTD interface and lighting for mola (Week 28)
- Completed detailed design and layout of LED board (Week 29)
- Completed layout of the CTD board (Week 29)
- Began detailed design of light control board (Week 29)
- Completed detailed design and layout of the light power and control board (Week 30)
- Ordered parts/boards for the 3 completed designs and began initial testing of the light board (Week 30)
- Installed an anode on Mola (Week 30)

- Tested glass transition and adhesion at elevated temperature of two optical potting compounds (Week 31)
- Thermal and initial qualitative optical tests on led light boards in Al channel with varying aspect ratios (Week 31)
- Brought up CTD interface boards (Week 31)
- Al channel heatsink design and mola mounting (Week 31)
- Light Power and Control board assembled and tested (Week 32)
- Began writing control software (Week 32)
- Completed initial uC software for laser, led and camera synchronization and control (Week 33)
- Initial tank test of new LED lighting to verify spread and flux; spread looked fine, but there is a potential opportunity to save additional power by decreasing flux, need to update luxonis camera driver to set maximum camera exposure and retest (Week 33)
- Updated camera control software to gate exposure time, retested system in the test tank and discovered all the lighting originally planned will likely be needed (Week 34)
- Began solid models for the power and control hub (Week 34)
- Finalized interconnect planning for the lighting system and ordered parts (Week 35)
- Completed power and control hub model (Week 35)
- Completed cable and housing wiring schematics (Week 36)
- Light bar assembly and housing/cabling build support (Week 36)
- Began laser fixturing design (Week 36)
- Designed and built a test box so the lights could be run in the test tank without the controller (Week 37)
- Build support and final assembly of the lights on mola in preparation for test tank (Week 37)
- Completed preliminary laser fixturing concept (Week 37)
- Laser mount design (Week 38)
- Mola Docking kickoff (Week 40)
- CTD harness build instructions and planning (Week 42)
- Began designing a 2nd laser fixture which would connect to the back end of mola (Week 43)
- Completed design of the new laser mount (Week 44)
- Began assembling OAK500 can (Week 44)
- Docking station concept design (Week 44)
- Oak500M chassis build, fixturing and harnessing designs, parts ordering (Week 45)
- Completed laser mount build and installed on mola (Week 45)
- Oak500m chassis build support and integration (Week 46)
- Added saddle to laser mount (Week 46)
- Blue Boat INS/RPi troubleshooting (Week 46)

902304 - Piscivore Cam

- Updated electronics fabrication planning (Week 4)
- PCv3 system care abouts doc and PCv2 camera build help (Week 6)
- Kick off meeting (Week 6)

- PC2 build support and specs (Week 8)
- Camera build support and testing (Week 11)
- Processor stack troubleshooting/build support (Week 12)
- custom lighting design for deployment on monday (Week 15)
- LED board build and initial testing (Week 16)
- Final potted LED board tests and lure scatter testing with new light (Week 17)
- Found better spec'ed lipo which will hopefully be more tolerant of overcharge (Week 17)
- Test preparation for future pcam camera sensor shoot out (Week 17)
- Pcam random delayed start troubleshooting (Week 17)
- Collected first images from 7 potential image sensor/complete camera candidates and ran initial low light testing on 5 of them against the current GoFish cam. Waiting on 2 more likely better sensors to be stocked to complete testing (Week 19)
- Dissassembled and ran some tests on 2 cameras which performed much better than the existing gofish cam to check compatibility with the existing system; unfortunately no easy swaps (Week 19)
- Researched electrical and magnetic field reception in salmon/tuna and sharks and existing fishing attractors (Week 19)
- Tested existing Pcam LED to verify it couldn't support 10x increase in power (Week 20)
- Layed out a new AI backed led pcb with boost converter and analog light sensor/dimmer and ordered parts (Week 20)
- Preliminary design of a housing/potting form (Week 20)
- Preliminary light sensor schematic capture, board design, build, integration and testing (Week 21)
- Light thermal testing and mechanical build (Week 21)
- Many wasted hours trying to find optically clear, pliable, water resistant, electronics rated potting compound with a lead time <2wks (Week 21)
- Boost converter testing (Week 21)
- Mechanical design and fabrication of the sensor enclosure (Week 22)
- tweaked layout and fabricated new light sensor board to increase light sensitivity in darker conditions (Week 22)
- New light baffle design, fabrication and testing (Week 23)
- Final light + sensor assembly and test tank test before fielding (Week 23)
- Ambarella computer vision product line research (Week 23)
- Reviewed evaluation kits from multiple vendors for ambarella chipsets and tried to contact all of them; met with the only 2 that responded (Week 25)
- Research TI Jacinto platform for machine vision (Week 27)
- Working with camera vendors to identify optimal sensor test platform (Week 27)
- Proposal meeting (Week 27)
- More computer vision chip research and trying to get proprietary camera data sheets (Week 28)
- Proposal write up for camera testing and quote for camera drivers (Week 28)
- Camera sensor NDAs to get access to datasheets (Week 29)
- Continued effort to get NDAs and proprietary datasheets for potential image sensor candidates (Week 30)

- Met with Rhonda Software to get a proposal bid (Week 32)
- Began looking at Rhonda SW bid (Week 33)
- Begged Framos to provide access to Sony image sensor software manual and datasheet, need to escalate with Sony... thankfully we have access to OnSemi hyperlux series or choices for the next Pcam camera system would all be terrible. (Week 33)
- Meeting to discuss Rhonda Software bid, development options and funding (Week 34)
- Talked to Rhonda Software about the quote (Week 37)
- Reviewed OnSemi Apps' suggestions regarding more available/mature image sensors than the bleeding edge, automotive part we had been targeting (Week 37)
- Proposal planning (Week 38)
- Memorandum of Understanding/Scoping for Rhonda Software contract (Week 42)
- Incorporated first round of feedback into MOU (Week 43)
- Completed MOU/project development plan for Rhonda Software and requested updated bid (Week 44)
- Rhonda software legal agreements and coordinating next steps (Week 45)
- Rhonda Software meetings, contract review - finally signed and PO issued (Week 48)

902306 - SINKER

- Updated block diagrams for the battery housing (Week 4)
- Initial power on testing of next two Control boards (Week 5)
- Battery module controller schematics started (Week 6)
- battery module schematics, block diagram updates and battery checklist (Week 8)
- Completed schematic capture of battery module boards and began hand off for layout (Week 9)
- Started review package for battery safety committee (Week 9)
- Started battery module harnessing design (Week 9)
- First Carson cruise to see sinker deployment (Week 10)
- Worked with Enoch to improve battery pack electronics design packaging (Week 10)
- Completed battery pack safety review package (Week 10)
- Working with Jose as battery pack design transitions to layout (Week 11)
- Battery Safety Committee review (Week 12)
- Updated battery pack schematics (Week 12)
- Identify/implement linear and servo motors for revised sealed bottom sinker (Week 14)
- Worked with Jose on battery interface board layout (Week 14)
- Identify motor candidates and controllers (Week 15)
- Finalized and ordered linear motor controller (Week 16)
- Reviewed battery interface board PWB (Week 19)
- Began detailed design for linear motor interface and reviewed existing bldc "dye injector motor" (Week 19)
- Continued detailed design of motor control board (Week 20)
- Final layout updates to the battery housing PCBs (Week 20)
- Marginal progress on detailed design of the motor controller board (Week 21)
- Finish electrical design of the motor interface board (Week 22)
- replanned battery board build (Week 22)

- Fixturing and form factor for the motor boards (Week 23)
- Layout review of motor interface board (Week 23)
- Checked out the motor interface board (Week 25)
- Chassis harnessing design for the motor board/controller/motors (Week 25)
- Began integrating the linear motor controller (Week 25)
- Began integrating linear motor and seal on sinker in preparation for tank tests (Week 26)
- Troubleshoot and fixed a partially dead IC (Week 26)
- Carson trip to test new seal/motors- it worked! (Week 28)
- Began testing Battery Interface board (Week 30)
- Identified issue on battery interface board - wrong jumper value specified, James is repairing a few ICs (Week 31)
- Initial power testing of battery interface board electronics (Week 32)
- Prepared for battery interface board layout (Week 33)
- Tested and troubleshoot SAMD module boards (Week 38)
- Troubleshoot module board (Week 41)
- Made fixturing for battery testing (Week 41)
- Battery interface board testing with real batteries and planning (Week 42)
- Identified ways to make the battery interface board modular but a group meeting uncovered additional mechanical risks which might impact the design (Week 43)
- Batteries are on order (Week 44)
- Identifying new reduced scope battery architecture (Week 45)
- Updating battery interface board to facilitate ETech assembly (Week 46)
- Updated the battery can electrical architecture; reworked the main board so it can be built short to create 2 different boards which will now fit in the MBARI oven or could be built externally. Revised charging so it could be done with more simple software outside the can. (Week 48)

902311 - Power Generation Onboard Wire Walker

Out of Office

- IEEE Oceans Sept 23 -27

Overhead

- Open House (Week 29)
- Read-net sampler controller schematic review (Week 29)
- Reviewed ESP Sampler Schematic for Alana (Week 30)
- UW MARS IPB schematic review (Week 33)
- Completed MARS IPB review and met with UW MARS EE team to convey comments (Week 34)
- Follow on collaboration with UW MARS team (Week 35)
- Preliminary layout review of the ESP Sampler board NFC circuits (Week 35)
- Oceans final planning (Week 38)

- Oceans last week - great experience but the conference has fractured and now competes with its offshoots for content and eyeballs (Week 40)