A sample of Amelia’s growth in 2021-22

# Completed Projects

* R/V Lee Thompson propulsion battery towers
  + Learned SolidWorks sheet metal tools
  + Designed sheet metal enclosures
  + Laid out components while considering electrical and mechanical connections
  + Navigated a challenging vendor
  + THEY WORK and the boat DRIVES!
  + Consulted and assisted on numerous boat challenges
* Sonar concept design
  + Developed and modeled array concepts for a novel sonar
  + Suggested an array concept that is extremely promising
  + Performed initial in-water testing to validate concept
* Sonar Assembly
  + Fit tested housings, troubleshot tapers in deep pockets
  + Fit tested boards into housings
  + Refined array fabrication process, documentation, and tooling
  + Trained new employee in array fabrication processes and documentation procedures
* Sonar Testing
  + Collected imagery on the R/V Light and R/V Sounder
  + Troubleshot EM noise and reliability issues
  + I continue to be the lead electrical and hardware troubleshooter on multiple sonar systems. I am currently training new employees to work with the guts of the sonars to do testing and repairs.
* Buoy fieldwork in Nome Alaska
  + Led primary battery pack fabrication and installation
  + Built test circuitry from Charles’ napkin sketches and conducted system electrical testing
  + Mounted main electronics boards into housings, wired them, managed cables
  + Overcame challenging parts shortages in a rural area with one hardware store and very limited ability to order parts online.
  + There we no battery fires on the R/V Sikuliaq – The primary battery packs were safe
* Novel sensor
  + Reviewed current academic literature
  + Simulated mechanical harmonics of cylindrical transducers to approximate the frequency of our unique mode under test
  + Designed and fabricated first prototype transducer
  + Helped understand and develop the drive waveform
  + Ruggedized test setup for field testing
* Leadership within DEI advisory group
  + Co-chair Spring 2021-Spring 2022
  + Met with Kevin and HR (separately) quarterly to further DEI efforts at the lab.
  + Helped to restart the seminar series at APL; assess APL progress against the UW DEI rubric; develop a survey to assess lab climate; create intranet content; improve onboarding; create bridges for communication between HR, Leadership, and APLers; continue the Unlearning Racism in the Geosciences program; and contribute to the DEI book club.
  + (For better or for worse) Lab leadership now widely knows my name and a bit about my research.

# Skill Development

* CAMWorks software training to run Haass CM1 mill
* Finished GD&T Course
* Mentoring and teaching
  + I am now the go-to person to walk new team members around the lab and introduce them to projects and lab spaces
  + Mentored multiple students and trained multiple new employees
* Electrical understanding and intuition. RF Noise, basic circuit design, interpretation of schematics and board layouts.
* Improved my PCB layout skills in Eagle
* Ceramic dicing saw operation and maintenance
* Strong internal professional network (added Kevin Williams, CIMU, and MHK to network)
* Developing external professional network
* Sheet metal design (solidworks) and fabrication (manual press break and external vendor)
* Rivnut and rivet installation and design for rivets
* Improved supplier knowledge and communication
* Matlab phased array toolbox for sonar array modeling
* Learned Visio for cable drawings, wiki formatting, Improved structure of my report writing
* Wilderness First Responder Training
* Improved bash scripting

# Future Professional Development

* Continue external and internal networking
* Transducer refinement and performance analysis
  + Sensor modeling and tradeoff analysis
    - Learn more about the mathematics and acoustics behind sensor design
  + Cross-train on the Acoustic Test Facility
  + PiezoCAD to model transducer performance
  + Finite Element Analysis (Ansys or Solidworks Simulation)
  + Continue CAMWorks training, fab parts on the Haass mill, experiment with machining of piezo ceramics
* Leadership on the newest sonar project (mentorship from Scott and potentially help from Liz)
* Leadership on Deep Retina assembly and testing
* Expand network through judging RoboSub competition
* Marine Acoustics Short Course
* Conference? Oceans ’22?
* Intro Python course
* Continuing Linux bash learning
* Use my tuition waiver benefit to take at least one UW course