

Rob McEwen Sorted By Project

600034 - Control Tech - Rock

- Preparing for next week's sea trial. (Week 5)
- Simulated deltaT failures and verified that new code correctly safes the vehicle. (Week 5)
- Ran deck tests (final flight code on the vehicle, real hardware) where we killed one of the beamformers and verified that the flightcode aborts the mission. (Week 5)
- Re-simulated all missions that we plan to run next week. We'll be testing the latest obstacle-avoidance algorithms that now include an Avoid Angle, as well as an Avoid Range. (Week 5)
- Analyzing object avoidance and Trn results from last dive. (Week 7)
- Assisting with debugging Replay (Week 9)
- Looking at re-activating the psi_berg state in TRN (Week 16)
- Resurrecting the three attitude estimates in Trn. I have run many simulations of different cases to determine if the old code still works. It looks like it does, but I'm still investigating. The eventual objective here is to use this first for LR replay, and then LR real-time. We're hoping mostly to capture the magnetic calibration compass error. But we may be able to estimate biases in the other two attitudes. (Week 19)
- Resurrected old Trn code so that estimates the three vehicle orientation angles. (Week 20)
- Modified this code to work with Reson beams. (Week 20)
- Verification is underway. Working with Rock and his lab on this. It is statistical in nature, and there are several knobs to turn. (Week 20)
- The first objective is to estimate magnetic compass offset error in the LR data. (Week 20)
- Simulating Trn estimates with various combinations of attitude and location biases. The objective is to determine the best parameter set and filter order for estimating yaw bias on the LR vehicle. Questions under consideration are: use 4 or 6 states; how many particles; initial guess and process noise variances; and others. (Week 21)
- Now getting a reasonable result from replaying Trn on LR data. This is the 4-state version with 100k particles. I'm waiting now to see if Stanford comes up with a similar result. They're going to use a different method (fminsearch in Matlab) to check. (Week 22)
- Also ran many simulations and replays of Portuguese Ledge Dorado missions with the 4-state Trn. The Dvl runs give reasonable results. However, they're not particularly convincing since the Kearfott is very accurate and doesn't have significant attitude errors during our mission. That is, the yaw bias always converges to zero, because it probably is zero. (Week 22)
- Ran simulations of this mission where the (simulated) Kearfott has a constant non-zero yaw bias. The 4-state Trn, using Dvl, converged to this quite well. It also correctly identified (simulated) Northing and Easting offsets. (Week 22)
- 4 and 6 DOF Trn sims and replays using the Reson also give mostly reasonable results. But I'm still unsure that the code is correct in this case. How and where to recoordinate the Reson beams from Dave's along-track/cross-track/down frame into each particle's frame is hard to conceptualize. Still going around (and around) with this. (Week 22)
- Working with Steve Rock to correlate Trn estimates of LR yaw bias with his fminsearch method. We're not there yet. (Week 23)
- Continuing to work with Prof. Rock to verify Trn heading estimate. (Week 24)
- Proposal discussions (Week 29)

708167 - Wave Energy Converter

- Assisting with Matlab scripts for the hydraulic controller. (Week 47)
- Waiting to see if I can do more on the radar-wave-arrival-estimation problem. (Week 47)
- Assisting Andy with machine characterization. (Week 48)
- Will investigate Hough transformation for wave arrival prediction. (Week 50)
- Will investigate Hough transformation for wave arrival prediction. (Week 51)

901101 - Added initial Deltat model to OI-Sim.cpp

901101 - Ocean Imaging

- Vetting nav440 data from September's radar test on the Paragon. (Week 44)
- Investigating converting Dave's boulder data from last week into an octree map. Will then verify Imagenex simulation using this map. (Week 44)
- Did some analysis for the 28 Sept Paragon radar test. Specifically, computed the translational velocity of the radar mount from a non-colocated Ahrs. (Week 45)
- Completed kinematic computation and plots for Andy's radar data. (Week 46)

901513 - Targeted Sampling by AUVs

- Refining drag estimate for proposed hovering thrusters on LR vehicle. (Week 24)
- Debugging stand-alone OA code now. (Week 48)

901800 - LRAUV Payload & Support

- Developing an OI Deltat simulation model for obstacle avoidance (Week 9)
- Doing a quick drag estimate for lateral motion with proposed thrusters. (Week 23)
- Will start working with Rich H on LCM interface to LR-Trn computer. (Week 24)
- Working on range estimates with proposed hovering thrusters. (Week 25)
- Will start plotting data to quantify hotel load. (Week 25)
- Also starting on the Trn interface. (Week 25)
- Analyzing data to breakdown power usage between components. Hampered by each variable having its own time axis, which requires interpolation to do any computation involving more than one variable. (Week 26)
- Will refine thruster drag estimates tomorrow when I have access to my office library. (Week 26)
- Proposal discussions (Week 29)
- Improving LR power analysis plots. (Week 29)
- Evaluating lrauv simulator code for possible inclusion of octree-based Dvl and Imagenex models. (Week 38)
- Investigating how to port Dorado OA code to lrauv. (Week 38)
- Did some power analysis on LRAUV data to determine the hotel and propulsion loads. (Week 39)
- Beginning to transfer obstacle avoidance algorithms and code from Dorado. (Week 39)
- Refining power estimates from Portuguese Ledge run. (Week 41)
- Beginning to transfer obstacle-avoidance code from Dorado. The objective is to retain the existing algorithm, and only change code where necessary to work with the LR architecture. (Week 41)
- Transferring obstacle avoidance code from Dorado to LR backseat. (Week 42)
- Exploring the feasibility of linking Octree code into Matlab. (Week 42)
- Continuing with port of OA code from Dorado to stand-alone application for LR "backseat" computer. (Week 44)
- Working on an OA test program that reads in simulated Imagenex and Kearfott data from the Dorado simulator, and flows it through the new OA code. (Week 44)
- Porting obstacle-avoidance code from Dorado to stand-alone app for LR backseat computer. (Week 45)
- Finished porting Dorado OA code to LR standalone app. Now the debugging starts. (Week 46)

- Ran a Dorado sim with a single Imagenex mounted at 45 degrees. We have a unit test that will play this data back through the stand-alone app to test it. (Week 46)
- Will resume testing LR-OA code with Dorado simulation. (Week 47)
- Discussing docking with LR team. (Week 47)
- Adjusted Dorado simulation to better model a single Imagenex in the LR vehicle. (Week 49)
- Ran the simulated data through the standalone OA code. It appears to work correctly. (Week 49)
- Beginning to work on the LCM interface. (Week 49)
- Assisting Rich H in LCM implementation in the OA app. (Week 50)
- Assisting Rich H in LCM implementation in the OA app. (Week 51)

901902 - Aerial Drones for Sci&MO

- Learning how to extract data from tlog format (Week 16)
- Preparing for possible UAV build. (Week 29)

Out of Office

- 13 Feb - 19 Feb.
- 27 Feb.
- WFH on Thursday and Friday.

Out of Office - On leave through most of August.

Overhead

- Adding a deltaT model to the OI sim. (Week 7)
- Developing a Deltat simulation model for Ocean Imaging (Week 9)
- Learning GIT (Week 16)
- Setting up home office (Week 16)
- Investigating Cigna/Medicare decision necessary at age 65. (Week 24)