

Rob McEwen Sorted By Project

300078 - DMO Divisional Support - AUV

- Simulated one of Dave C.'s mid-Atlantic mapping missions (Week 13)
- Still working on grt to octree conversion for the corresponding map (Week 13)
- Debugging a pitch oscillation that occurs during steep climbs and dives. (Week 13)
- Debugging large pitch oscillation that occurred on a steep hill on Dave's EMARK_vents mission. (Week 15)
- Received the map from Dave, cut it up into .grd tiles, and created octree tiles. (Week 15)
- The simulator then reproduced the oscillation quite accurately. (Week 15)
- Devised and coded a fix. Added a new method for computing altitude from the Dvl beams. The algorithm fits a plane to the four beams with least squares, then takes the normal to the plane for altitude. (Week 15)
- The simulator then verified that this eliminates the oscillation on that mission. (Week 15)
- Worked with Kent to roll GMT back to version 5 to get around the grdcut -N bug introduced in V6. This required doing a CMAKE build from source. (Week 19)
- Developed tileMaker.m that incorporates createbo script and has configurable tile sizes. (Week 19)

600034 - Precision Control Technologies for ROVs and AUVs

- Meeting later today (Tues) on porting the flight code and simulation to Linux (Week 9)
- Working through FLS moving-map code. (Week 21)
- Resuming work on integrating mbtrnpp into the simulator. Much debugging. (Week 26)
- Completed first pass at adding mbtrnpp to the simulator. It's working. (Week 29)
- Second pass will eliminate duplicated code and unnecessary computations. (Week 29)
- Found long-standing bug in Attributes class. (Week 29)
- Completed simulation of Caress's Axial mission. This includes both the flight code and mbtrnpp. (Week 35)
- The simulation was successful. Recent word was that Trn worked up there a few days ago, as predicted by the simulation. (Week 35)
- Working on eliminating duplicate multibeam code from the simulation. (Week 35)

901405 - Wave Energy Buoy

- Working on Matlab code that estimates drag and added masses for the buoy, PTO, and Heave Cone. (Week 5)
- This code outputs the parameters in ASCII with embedded Latex symbols, ready for input to the .md file on Github. (Week 5)
- Recomputed added masses and stability derivatives to refer to their attachment points, as required by the buoy simulation. These computations are preserved in Matlab code. (Week 6)
- Updated the mkdoc/Latex document accordingly. (Week 6)
- Pushed it and the Matlab code into the Git repository. (Week 6)
- May need to translate inertias or added inertias to the center of mass. Meeting later today. (Week 9)
- Recomputed the added mass moments of inertia for the three components to be about the center of mass. It turns out that this is what Gazebo needs. (Week 10)
- Updated the document, theory.md, and the Matlab code. (Week 10)
- Pushed these into my branch and issued a pull request. (Week 10)

901513 - Targeted Sampling by AUVs

901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach

902101 - LRAUV Technology Development and Fleet Operations

- Reviewing Docking runs from last December. (Week 7)
- Making block diagram of the homing and control loops. (Week 7)
- Worked through proportional navigation algorithm (Week 9)
- Reviewing docking runs from December. (Week 9)
- Looking for clues on how to reduce homing error. (Week 9)
- Discovered that vehicle does an unplanned short-range dock attempt after every undock. (Week 9)
- Recommended fixing the unplanned dock by just drifting for 15 minutes immediately after undocking. It's an easy fix. (Week 10)
- Discovered why sometimes the vehicle doesn't know it missed the dock. It's because the DAT validity checks ignore hits that don't have all good data, principally bearing. Then, the rangeClosing function ceases to get sufficient data to determine the range is increasing because the DAT doesn't get good bearings when the transponder has passed behind the vehicle. However, it is still getting good ranges. So we need to adjust the code so that rangeClosing() just looks at ranges irrespective of whether the bearing is valid. (Week 10)
- Added a fix for the rangeClosing() problem where it doesn't detect a miss. (Week 12)
- Pushed it onto a new branch feature/rangeClosing-fix-rob (Week 12)
- Will now test it in simulation. (Week 12)
- Verified rangeClosing fix in simulation. (Week 13)
- Working with QS on lineCaptureHoming.xml to remove premature dock attempts. (Week 19)
- Working on docking test plan. Getting a better idea of which knobs to turn. (Week 19)
- Debugging water current simulation in the LR simulator. (Week 21)
- Able now to specify ocean currents directly in Simulation.cfg. (Week 23)
- Simulating docking events with ocean current. (Week 23)
- Working on adding an auxiliary waypoint to lineCaptureHoming.xml for missed-dock events. (Week 23)
- Ran B&T step tests in the tank to test the damping of the moving mass control (Week 38)
- It was overdamped. Thus the underdamped response previously seen requires the vehicle to be in flight. (Week 38)
- The simulator presented a similar underdamped response. (Week 38)
- I was able to obtain a well-damped response in the simulator by adjusting the deadband and gains. (Week 38)
- I'm hoping to try this at sea soon. (Week 38)

Out of Office

- First two weeks of August.

Overhead