600034 - Control Tech - Rock

Week 51

1. Rich Henthorn
    a. LRAUV TRN mission analysis
2. Mike Risi
    a. Implementing rov-control commands
    b. Continuing Qt Pilot GUI development

Week 50

1. Mike Risi
    a. Porting xojo Pilot GUI to Qt

Week 48

1. Rich Henthorn
    a. TRN

Week 47

1. Mike Risi
    a. Adding/testing commands to generic rov-contol system

Week 42

1. Kent Headley
    a. Minor code review for Rich
2. Rich Henthorn
    a. Address issue with measT constructor that was causing memory allocation erros
3. Brian Kieft
    a. Reviewing data from last TRN run

Week 40

1. Brian Kieft
    a. Sent off logs for analysis to Steve

Week 39

1. Rich Henthorn
    a. Integrating TRN into LRAUV

Week 38

1. Rich Henthorn
    a. Modifying the mission replay application for use with LCM
2. Brian Kieft
    a. Working on 2 vehicle relative positioning for TRN runs. Harbor testing

Week 37

1. Rich Henthorn
    a. TRN on the LRAUV picked up where we left off in Q1
    b. App builds and runs on target with updated lrauv-lcmtypes
    c. Need tests to ensure message data is read correctly
2. Brian Kieft
    a. See below. TRN runs at Portuguesse Ledge.

Week 35

1. Kent Headley
    a. Phase 2 proposal discussion
2. Brett Hobson
    a. Completed the migration of Pontus' nose payload to the new titanium frame and prep'd her for a Wed deployment.
3. Mike Risi
    a. Continued adding user interface commands to the generic ROV control system

Week 34

1. Kent Headley
    a. Telecon with Steve to discuss phase 2 proposal
2. Mike Risi
    a. Meeting with Steve to go over concept for target hunting mode in mid-water tracking control system.
    b. Working on interface to transition between hunting and tracking modes.

Week 33

1. Brian Kieft
    a. Preparing for next run at Portuguese ledge which will involve relative positions between two vehicles
2. Mike Risi
    a. Updated opencv to version 4 on home development machine. Updating code to work with new version.

Week 31

1. Brian Kieft
    a. Sent latest Portuguesse ledge data off
2. Mike Risi
    a. Preparing Vision-only registration survey test on Ventana in September

Week 30

1. Rich Henthorn
    a. Proposal
    b. Wrapped the replay-trn_server issue

Week 29

1. Rich Henthorn
    a. Replay-TRN server connection issue
    b. Team meeting
2. Rob McEwen
    a. Proposal discussions

Week 28

1. Kent Headley
    a. Working w/ team to provide 2011 Axial data sets
    b. Wrote data converter (MB88 bathymetry/navigation to CSV)

Week 26

1. Kent Headley
    a. Discussion of TRN updates w/ Rich
2. Rich Henthorn
    a. TRN replay utility bugfix
    b. Replay data sources
3. Mike Risi
    a. Testing of mid-water tracking control system with Steve Rock in test tank

Week 24

1. Rich Henthorn
    a. Looking into mission-replay connecting to trn-server issue
2. Rob McEwen
    a. Continuing to work with Prof. Rock to verify Trn heading estimate.
3. Mike Risi
    a. Working on generic rov-control application for ROVs

Week 23

1. Rich Henthorn
    a. LRAUV TRN with McEwen
2. Rob McEwen
    a. Working with Steve Rock to correlate Trn estimates of LR yaw bias with his fminsearch method. We're not there yet.
3. Mike Risi
    a. Working on generic rov-control application for ROVs

Week 22

1. Rob McEwen
    a. 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.
    b. 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.
    c. 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.
    d. 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 recoordinatize 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 21

1. Rich Henthorn
    a. Discussing repo concerns
2. Rob McEwen
    a. 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.
3. Mike Risi
    a. Finished all standard input publisher and subscriber classes
    b. Working control loop implementation

Week 20

1. Kent Headley
    a. Fixed a number of warnings from static analyzer/compiler
    b. Drafted architecture concept notes/diagrams
2. Rich Henthorn
    a. Reviewing pull-requests
    b. Reviewing architecture documents
3. Rob McEwen
    a. Resurrected old Trn code so that estimates the three vehicle orientation angles.
    b. Modified this code to work with Reson beams.
    c. Verification is underway. Working with Rock and his lab on this. It is statistical in nature, and there are several knobs to turn.
    d. The first objective is to estimate magnetic compass offset error in the LR data.
4. Mike Risi
    a. Working on rov-control application for ROVs
    b. Meeting with Steve to discuss 2021 work and stereo camera setup

Week 19

1. Kent Headley
    a. Working with Rich on concepts for TRN interface architecture
2. Rich Henthorn
    a. Team discussions about combing TRN communication designs of MB-System and LRAUV
    b. Replay-to-server interface issue
3. Rob McEwen
    a. 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.
4. Mike Risi
    a. Working on generic rov-control application for ROVs

Week 18

1. Rich Henthorn
    a. Addressing TRN replay-to-server interface bug
2. Mike Risi
    a. Working on generic rov-control application for ROVs

b. Final review of mid-water tracking control with Steve Rock

Week 17

1. Rich Henthorn
    a. Regression tests: updated git apps vs. legacy CVS apps
    b. Meeting with TRN team to discuss new development practices
    c. Addressed bug in map loading code
2. Mike Risi
    a. Removed Linux specific code in update timer
    b. Finished first cut of mid-water tracking control system, ready for tank test

Week 16

1. Kent Headley
    a. Working with Rich on some TRN code cleanup
    b. Writing proposed plan for managing new TRN repo
2. Rich Henthorn
    a. libtrnav replaces G2TerrainNav as development repo going forward
    b. Using trn-replay to validate libtrnav ⇔ G2TerrainNav numerics
    c. TRN LCM comms
3. Rob McEwen
    a. Looking at re-activating the psi_berg state in TRN
4. Mike Risi
    a. Continuing plumb in signals and testing with LCM log files
    b. Working on first cut of gain scaling for the range and lateral control loops

Week 15

1. Rich Henthorn
    a. More work cleaning libtrnav
    b. Researching TRN test automation
    c. Planning to remedy a trn-server issue
2. Mike Risi
    a. Finished core of midwater tracking control system, starting to plumb in signals
    b. Review of midwater tracking control system with Steve Rock
    c. More work clean up LCM control framework

Week 14

1. Rich Henthorn
    a. Merging G2 of TRN with libtrnav
    b. Listing updates to G2 since before libtrnav branched-off
    c. Meeting with team to identify issues and milestones going forward
    d. Pushing changes back to libtrnav
    e. Identifying candidate tools and build systems for libtrnav going forward
2. Mike Risi
    a. Continuing clean up of LCM framework
    b. Working on UI commands for midwater tracking control system

Week 13

1. Mike Risi

    a. Working on LCM frame work for precision control projects

Week 12

1. Kent Headley
    a. Syncing updates among libtrnav and MB-System git repos
2. Rich Henthorn
    a. Listing candidate updates from auv-qnx to libtrnav

Week 10

1. Rich Henthorn
    a. Repaired the TRN replay build
    b. Fixed a intermittent error (unrelated) in TRN replay

Week 9

1. Rob McEwen
    a. Assisting with debugging Replay

Week 8

1. Kent Headley
    a. Distributed code/doc package for TRN (terrain relative nav) plot generation
    b. Made updates to TRN configuration tool (simpler, cleaner preset selection)

Week 7

1. Kent Headley
    a. Cruise 06feb20 was successful; the vehicle made ~8 obstacle avoidance test runs, and terrain-relative nav (TRN) worked well. The changes in TRN we tested were successful in addressing the sawtooth data artifact from November. Still chasing down an anomaly in one dive.
    b. Organized TRN log plot scripts into proper command line app
    c. Re-organized some of the web-based command line builder tool and added responsive buttons
    d. Updated mbtrnpp app to use single session ID so that log files share common name and made some adjustments to TRN log naming and directories
2. Rich Henthorn
    a. Successful day on the Carson last Thursday. Many new and updated components worked well.
    b. Post-mission data analysis
3. Rob McEwen
    a. Analyzing object avoidance and Trn results from last dive.

Week 6

1. Kent Headley
    a. Preparing for dive day this Thu: wrote web-based configuration tool for terrain relative nav (TRN) application, which has a lot of options. Worked with Rob and Hans on software testing.

Week 5

1. Kent Headley
    a. Code and testing for cruise next week (06feb20). We are using a pub/sub mechanism for Terrain Relative Nav (TRN) updates to the main vehicle computer as part of a solution to address some data

artifacts in the November dives. We will be doing some obstacle avoidance tests and refining code we plan to run on the WHOI Sentry vehicle this summer at Axial seamount.

2. Rich Henthorn
    a. Development, test, and prep for Dorado TRN/Obstacle-Avoidance test Thu Feb 6.
3. Brian Kieft
    a. Met to discuss plan for 3 vehicle run and go over recent results with Rowe DVL
4. Rob McEwen
    a. Preparing for next week's sea trial.
    b. Simulated deltaT failures and verified that new code correctly safes the vehicle.
    c. 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.
    d. 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.