

Capstone Team 45 Status Update 02-20-19

The following is a list of status updates and goals for each of the four subteams:

Airframe

(Ryan Anderson, Tyler Critchfield, Kameron Eves)

Last Week:

- Planned all required design review artifacts
- Completed 75% of required design review artifacts
- Compiled an R/C bill of materials and ordered the parts needed for an R/C only plane
- Compiled a comprehensive bill of materials for a fully functional plane
- Finished as much of the second airframe as possible before cannibalizing the first airframe

Next Week:

- Build second R/C plane
- Finish preparing for design review

Controls

(Andrew Torgesen, Brady Moon, John Akagi)

Last Week:

- Close to finished with Design Review artifacts
- flight test with UGV
- Decided on path planning architecture:
- Many suggested reactive path planner, but it's also important to ensure that we can do a priori path planning
- Probably going to use a priori RRT as the base, then use the path follower to do reactive fine-tuning of obstacle avoidance and waypoint capture

Next Week:

- Finish documentation
- Decide best way to ensure waypoint capture with obstacle avoidance—perhaps by creating waypoint sinks in a potential field
- More flight tests!
- Develop joint estimation scheme between Inertial Sense and ROSPlane

UGV

(Jacob Willis, Derek Knowles, Brandon McBride)

Last Week:

- Worked on capstone documentation
- Worked on bug where bay door opens when odroid turns on, rewriting arduino code.
- Successful drop test from RC controlled airplane.

Next Week:

- Documentation for design review
- Finish arduino fix
- Improve UGV bay enclosure using better plastic.
- More drop tests - get timing estimate for release and drop

Vision

(Tyler Miller, Jake Johnson, Connor Olsen)

Last Week:

- lots of documentation work for design review and just general helpful documentation on the imaging repository itself
- found a good way to generate our autonomous dataset, pulling frames out of a video (similar to how we find objects in the current autonomous codebase). **see super cool video attached**. This is a fast and easy way to make imperfect/warped shapes to challenge the neural net.
- minor fixes/improvements to gui/server

Next Week:

- fly, get a good bag of data with target locations recorded.
- generate the entire shape dataset using the above method

Please send us any feedback with regards to the progress we've made, as well as our plans for the coming week.