CMPE 195B

September 4, 2017

Update for Project ARD

Group Updates: Researched other options for gaining autonomous flight along with commanded flight paths from base station. The direction we need to go is, sending the GPS coordinate from a smartphone application to a base station computer. The computer should then command the drone to this location.

Anahit

Ali

Max

* Reviewed Erle Brain 3 option presented by Brian
* Provides greater control over drone with the ability to utilize autonomous features and GPS
* Allows use of telemetry which can enable communication from drone to another device
* Downside is cost of all hardware, however, the erle brain would truly make this project more effective

Brian

* Address the questions moving forward from previous week
  + Reading into several different drones, we may find our solution
    - Erle Brain 3 quad/hex copter drone
      * We can program the simulator to have 2D laser and Sonar for autonomous flight testing in gazebo ([Link](http://docs.erlerobotics.com/simulation/vehicles/erle_copter/tutorial_1#sonar))
      * Built in GPS
      * Flight telemetry > 2km range
      * Runs on a Linux based OS for direct firmware dev
        + This will allow us to go in and modify the code so that we can augment the autopilot controls with the GPS and heading information.
      * Compatible with PX4 autopilot software
      * Cost for all hardware = $650. (not incl. shipping)
        + **It is more expensive to buy the individual parts, and interface them with the Xiro Xplorer**
      * Assembly options
        + Either purchase the full drone
        + parts separately
    - Interface the Pixhawk with a RPi3 via MavLink
      * This allows us to accomplish a GCS controlled mission command, however does not include the object detection.
      * We would need to develop all of the object detection and flight control responses ourself.
      * Pixhawk Autopilot controller $260
      * RPi = $35
      * This is the second choice because of the inconsistent documentation
    - No testing has been done on the Crazyflie since last week. I am leaning away from the Crazyflie because we are not able to modify its firmware for object detection or command signals.
* Questions moving forward
  + Can we order the Erle Brain 3 drone with necessary peripherals?
  + So far, we have spent
    - $320 on the Xiro drone and Crazyflie interface
    - $200 on a second Crazyflie drone
* Tasks moving forward
  + Continue developing on the Crazyflie in the event we cannot order a new drone.

Links

* [Erle Brain 3 Drone](http://docs.erlerobotics.com/erle_robots/erle_copter)
* [Pixhawk to RPi3 Project](http://ardupilot.org/dev/docs/raspberry-pi-via-mavlink.html)