Sprint 5 Start

Long Flight Time Buoyant Drone March 9, 2021 7:30 PM(PST)

horizontal lineATTENDEES

* Excused absences: N/A
* Unexcused absences: N/A
* Late: N/A

## AGENDA

* Administrative Stuff 7:30
  + Reviewed Gantt Chart to insure that we are on track
  + Decide Scrum master, Dylan
* Define Goals (General, see where we need dependencies etc) 7:54
  + Dylan - 7:56
    - Finalize All Parts 3/14
  + Isaac - 7:56
    - Implement drag force and RC 3/19
  + Leon - 7:57
    - Be able to read from every sensor at once 3/19
  + George - 7:59
    - Write C libraries for use in simulation
    - Path Following and Terrain Tracking in Matlab Simulation.
      * Include calculations for power usage to confirm power budget values.
      * Use the linear MIMO state space discrete time-Zero Order Hold model for control, but use a nonlinear model for physical responses to commands to check for stability and controllability.
      * Only the ideal sensor model is tested, but disk margin should be tested as well in preparation on stochastic sensor error testing over break.
  + Ryan - 8:00
    - Finalize wiring schematic
    - Finalize PCB board
    - Finalize PCB electronics in BOM
    - Write sensor libraries
  + Jeremy - 8:01
    - Finalize Power Budget
    - Get PCB power simulations working
    - Help Leon with Sensor code with microcontroller
* Define End Date 8:02
  + Sprint end: 3/19/21
* Tasks (Specific) List Requirement ID if available. Time estimate 8:03
  + Leon (30 hours) - 8:13
    - Write library for each sensor to read from them using interrupts (20 hours)
    - Write code to use every sensor at the same time (5 hours)
    - Perform test run around neighborhood showing sensors working over time logging data and make data presentable (5 hours)
  + Jeremy -
    - TBD
      * (Jeremy Left Early **Excused**)
  + Isaac (40 hrs) - 8:15
    - Decide on GUI variables for RC (4 hours)
    - Add in code to RC variables (20 hours)
    - Add in drag force depending on movement speed (6 hours)
    - Import better design (10 hours)
  + Dylan (30 hours) - 8:16
    - Finalize Envelope Material using Pugh chart (4 hours)
      * Email about how best to sew parts together (material/method)
    - Add extra support 3D printed parts to CAD (2 hours)
    - Find Heat sink and added to CAD (2 hours)
    - Double check/look for better parts that team is unsure of
      * ESC (3 hours)
      * Servos (3 hours)
    - Find Servo Connector piece (2 hours)
    - Find little screws for ultrasonic sensors and add to CAD (2 hours)
    - Make sure all parts are finalized with vendors by the 14th (8 hours)
    - Sensors Library coding (4 hours)
  + George (46 hours) - 8:19
    - Write alpha angle program in C (5 hours)
    - Write throttle factor program in C (2 hours)
    - Apply LQR to develop PD control (5 hours)
    - Add integral control to system (5 hours)
    - Discretize system with Zero Order Hold (5 hours)
    - Run simulation to test robustness (1 hour)
    - Develop Nonlinear system model to act as system response to control commands (6 hours)
    - Run simulation of nonlinear responses to linear control commands (7 hours)
    - Run simulation to test path following and terrain tracking (10 hours)
  + Ryan (29 hours) - 8:20
    - Update documentation with current version (3 hours)
    - Wire up balloon pressure sensor and add it to the BOM (1 hour)
    - Update all parts in BOM with weight allocation (based on breakout boards) (2 hours)
    - Hand wire the board with a 5V plane, GND plane and wire up all ICs solder points. Reduce signal noise by separating data lines from voltage rails as much as possible (10 hours)
    - Verify PIC32 microcontroller oscillator if it needs an external oscillator (1 hour)
    - Write up C library to communicate between microcontroller and sensors (12 hours)

Meeting End: 8:25PM