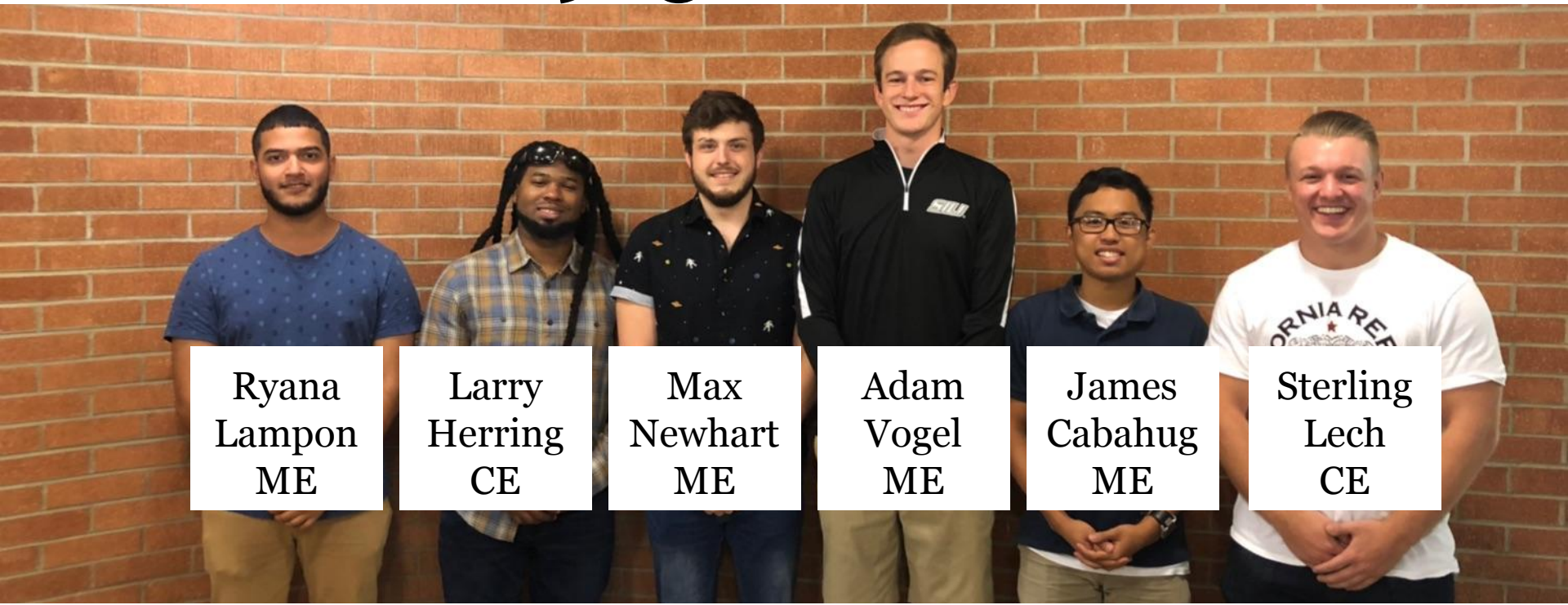
F19-51-DRON



FTA: Mr. Cubley Client: SIU Rocket Team

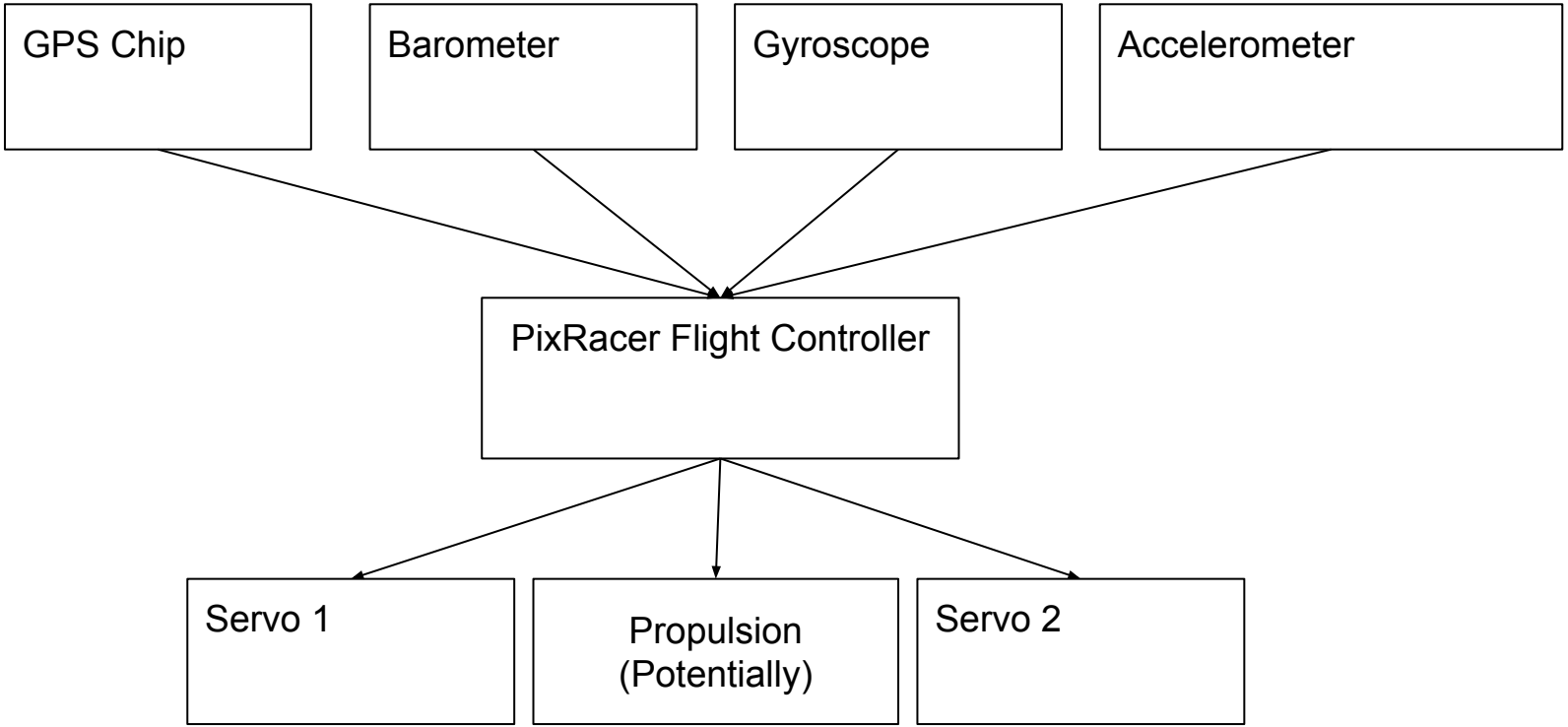
ECE Subsystem Test

Larry Herring: Programmer
Sterling Leech: Scrum Master

Drone’s Microcontroller:

- mRo PIXRacer R15
- Software: C++
- Frysky Telemetry: Mission Planner
- Main Hardware Components & Specs
- Hardware layout Update
- Testing Ejection Rest

Block Diagram:

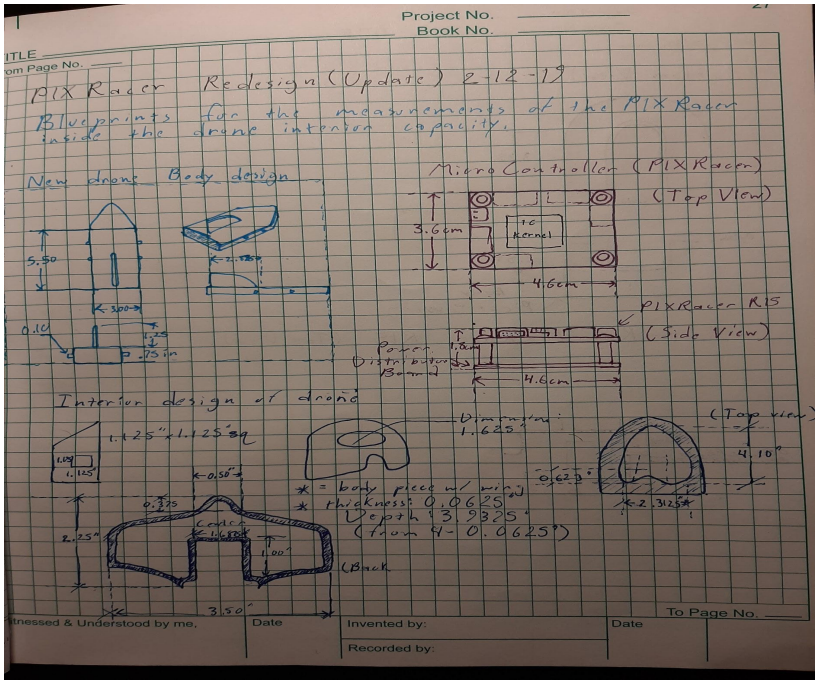


Main Hardware Components

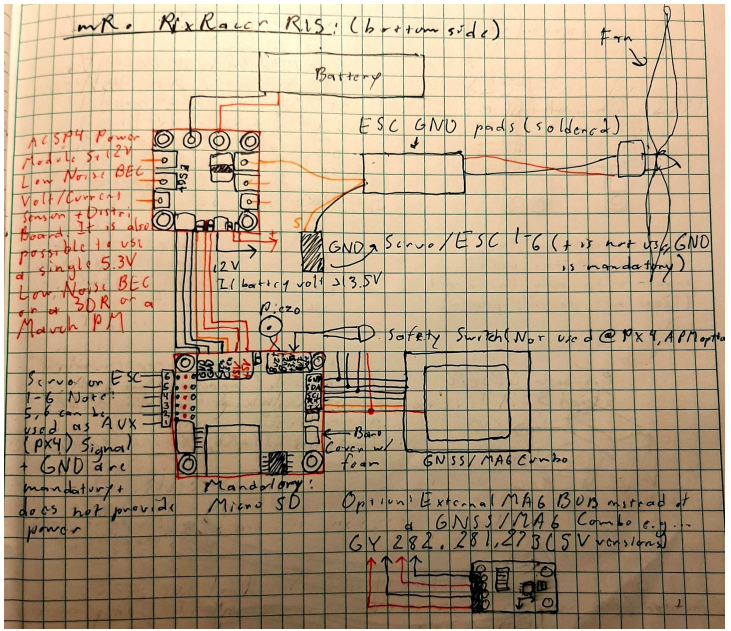
- Global Positioning System (GPS) Chip:Tracks the location of the drone’s whereabouts through the mission planner. .
- 3 - axis Accelerometer: Measures the speed and direction of the drone.
- Barometer: measures the atmospheric pressure and altitude of the drone.
- GyroScope: measures and maintains orientation and angular velocity
- Magnetometer: measures magnetism - the direction, straight or relative change of a magnetic field of a particular location.
- ICM - Integrated connector module: a connector that integrates all the magnetics required to meet the Ethernet Standard for xBASE T Connection

Hardware Layout design Update

Body design of Drone & Measurements:



Hardware design layout:



Ejection Rest (Testing Launch)

Ejection Rest: Test results

- Test performance has been done
  - Testing for Rocket to launch within atleast 10ft distance completed
    - Test material: Plastic Drone with microcontroller inside
  - PIXRacer controls the servos in the wings
    - Signal connection through mission planner was successful
    - No damages occured to the microcontroller during testing
  - Battery life Health remains unknown
- Future research and testing will be established
  - Deployment tests:
    - Making sure the microcontroller sensors functions adequately
  - Drone dropped from airplane
    - Testing will provide data on hardware layout design/deployment
      - Effects flight control

Conclusion & Next Step

- Further research will be done for finding better quality hardware specs
- No tests on full prototype have been made yet due to waiting for availability of test location/procedure.