Navy’s Autonomous Data Transfer Buoy

**Purpose**
Wirelessly transferring sensitive data creates windows of opportunities in which that data can be stolen. While at sea this has proven to be a major issue for the Navy and in order to mitigate the potential of data theft a hard link connection must be made to transfer data. To remedy this, a buoy capable of maintaining a location out at sea will serve as a data center that can connect to other unmanned vessels and exchange data between the two.

**Goals and Objectives**
❖ Design a buoy able to autonomously maintain set GPS coordinates
❖ Develop multiple connection points for unmanned vessels to perform hard link data transfer
❖ Log all steps of the mission and locations of buoy and vessels through a GUI

**Structural Key Points**
❖ Based off buoyant force calculations, capable of holding 7kg of weight
❖ Structure is light (<1kg) making it highly maneuverable allowing the buoy to maintain its set location easier
❖ Disassembly of platform to allow for modifications and repairs whenever necessary

**GUI Key Points**
❖ Map that displays locations of both the buoy and the vessels travelling toward the buoy
❖ One easy click button to send all necessary files to the buoy from ROC
❖ LED signals clearly display all steps in the mission and whether or not they have been completed

**Project Timeline**
- **Oct. 2019**
  Outline all necessary requirements and specifications
- **Dec. 2019**
  Initial prototype of structure and GUI, test code for motors
- **Feb. 2020**
  Finish modifications to prototypes and complete debugging
- **Mar. 2019**
  Present final design to Navy and test demonstration

**Team Structure**
- **Chief Engineer**
  Taylor Calderon
- **Controls Eng.**
  Chenguang Yang
- **Structural Eng.**
  Taylor Calderon
- **GUI Eng.**
  Jiayi Wu