Triton

Team 11
April 14, 2017

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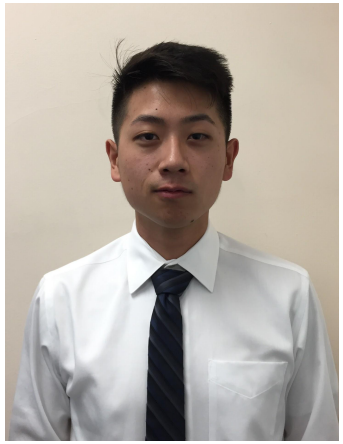
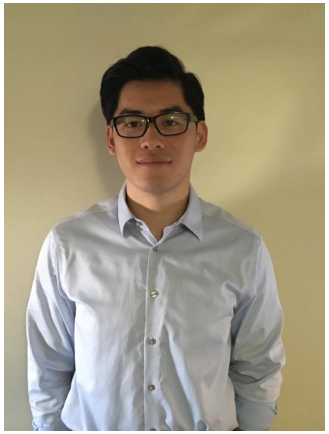
Emil Safonov, CSE

Calvin Tran, EE



Kevin Tong, ME



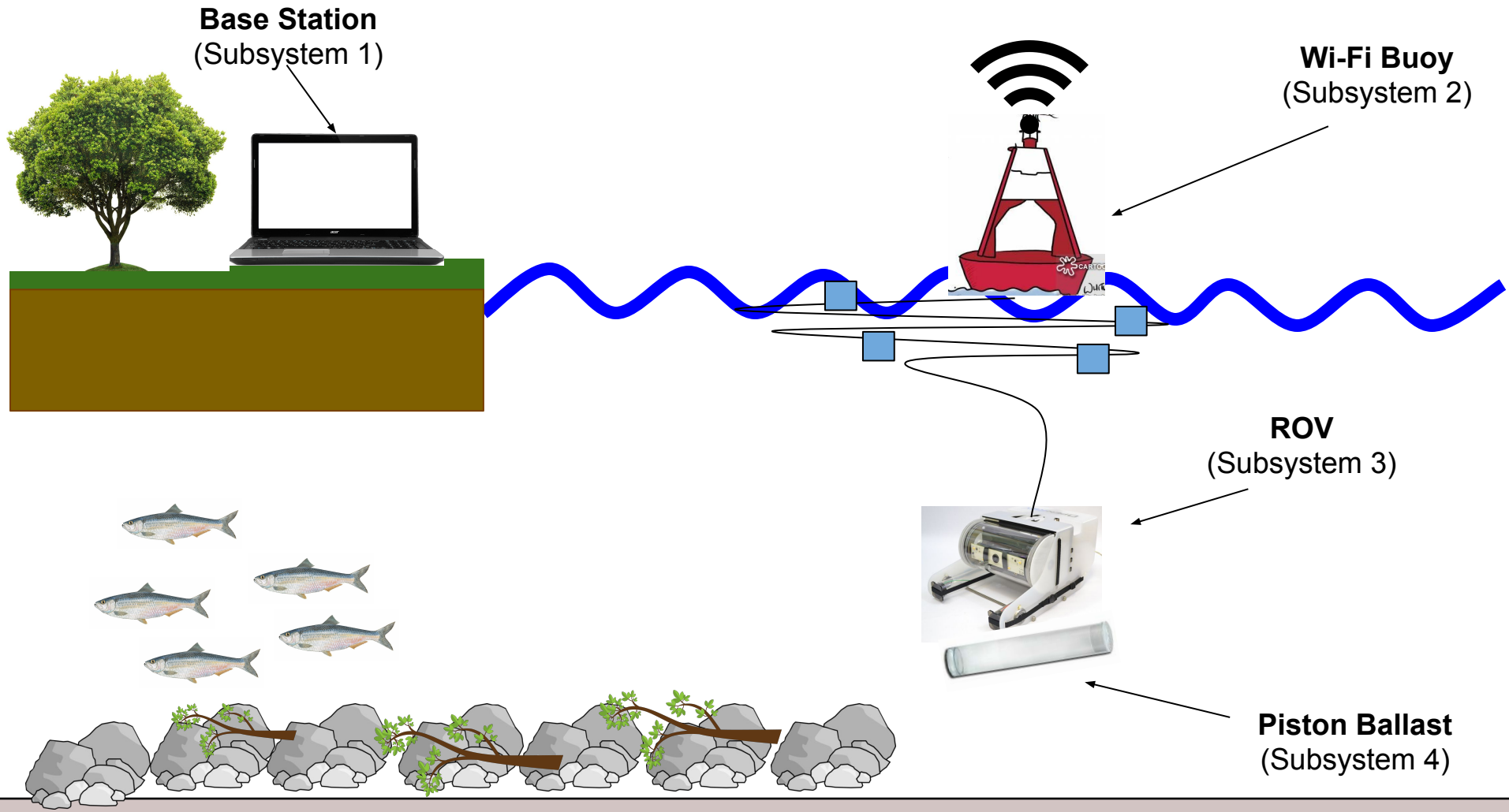
Tony Hua, ME

- Advisor: Prof. Andras Moritz
- Advisor: Prof. Frank Sup

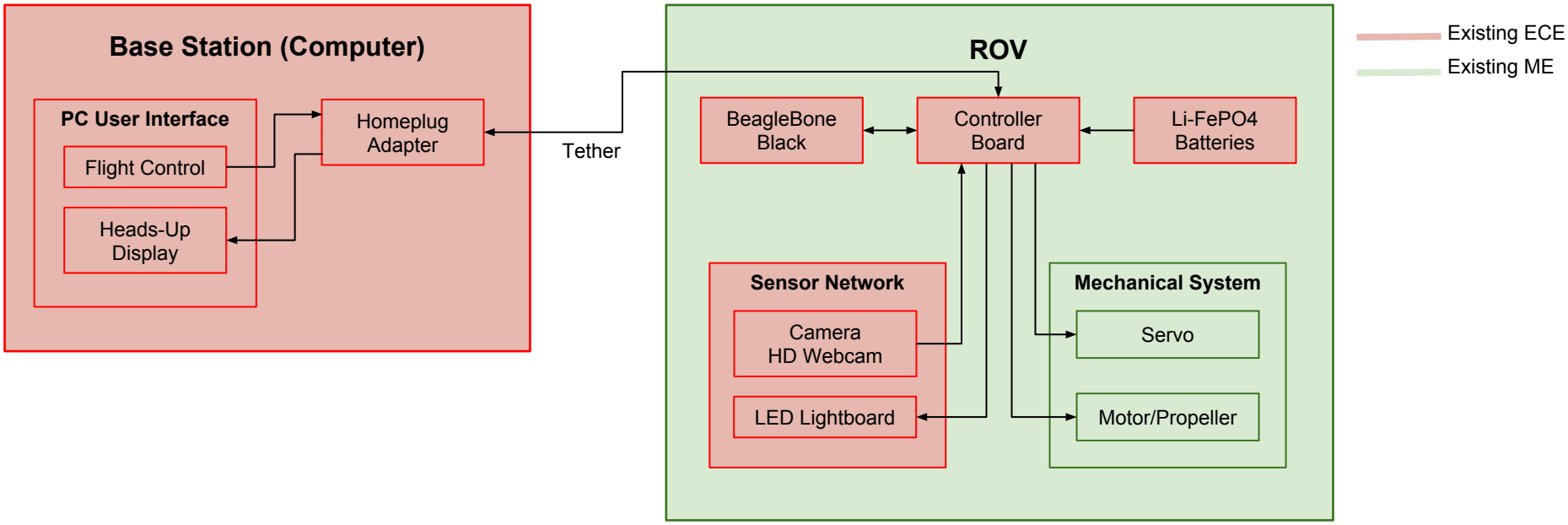
Introduction

- Ecologists from UMass Amherst are interested in studying spawning behavior of river herring
- No economical solution for underwater exploration in ponds/lakes
- Triton will enable researchers to observe and record underwater biological phenomena

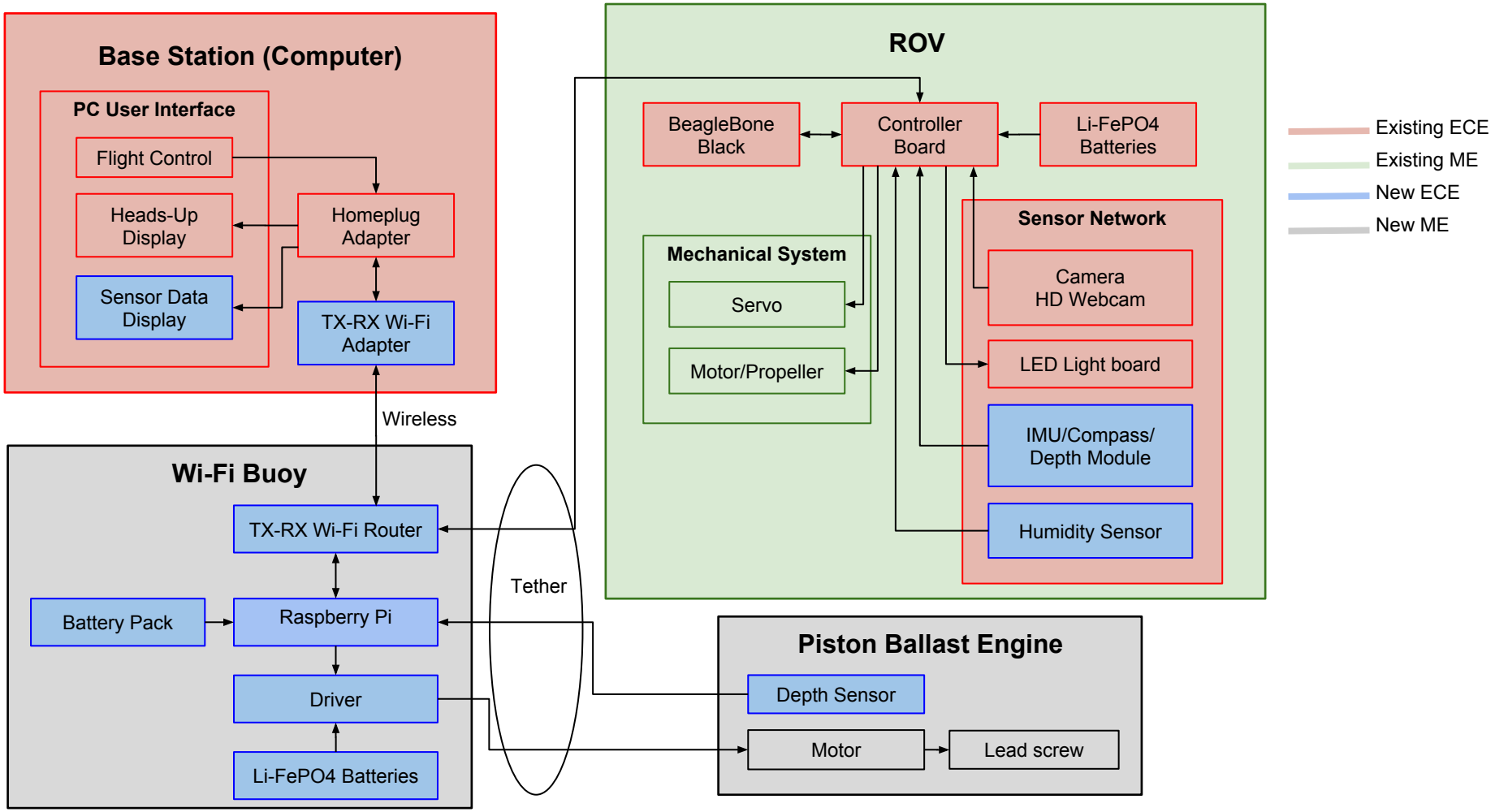
System Overview



System Block Diagram (Before)



System Block Diagram (After)



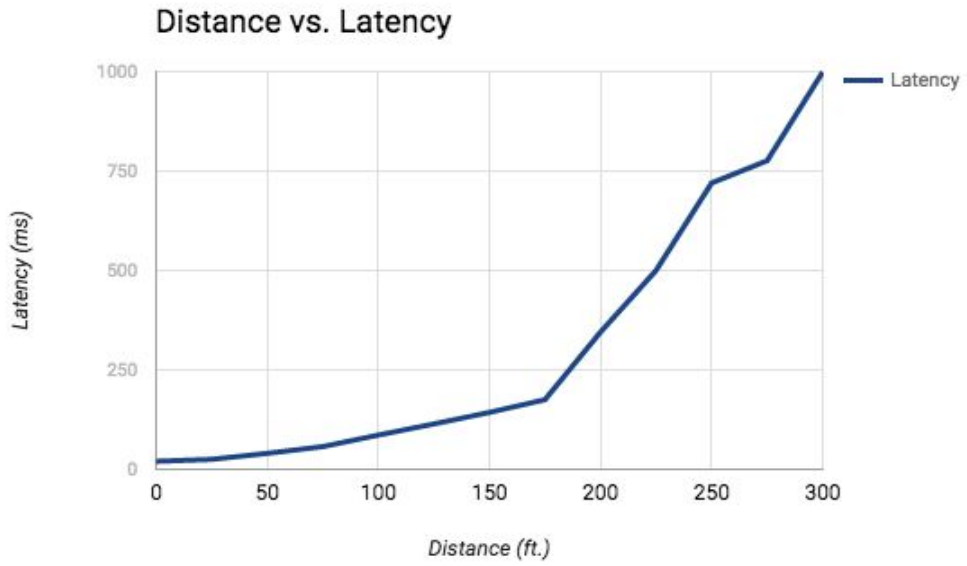
Subsystem 1: Base Station

- Wireless controls/video feed
- Video saving on local drive
- SSH control for piston ballast

Subsystem 2: Wi-Fi Buoy

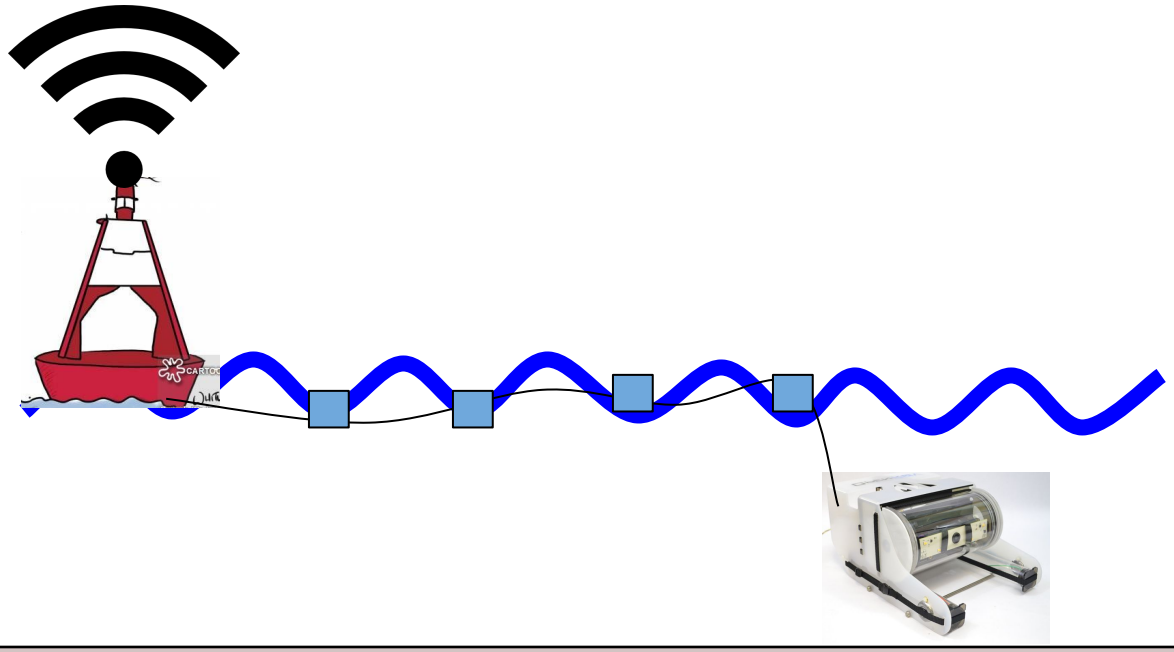
- Raspberry Pi Model B + Wi-Fi Adapter

- Wi-Fi Setup



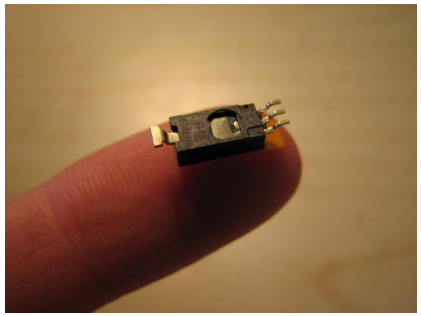
Subsystem 2: Wi-Fi Buoy Continue…

- Electronic enclosure
- Reduced tether length



Subsystem 3: ROV

- Rehabilitation process
- Depth/compass sensor
- Humidity sensor



Subsystem 4: Piston Ballast

- Piston ballast design
- Driver for piston ballast
- Closed-loop control

Requirement Specifications

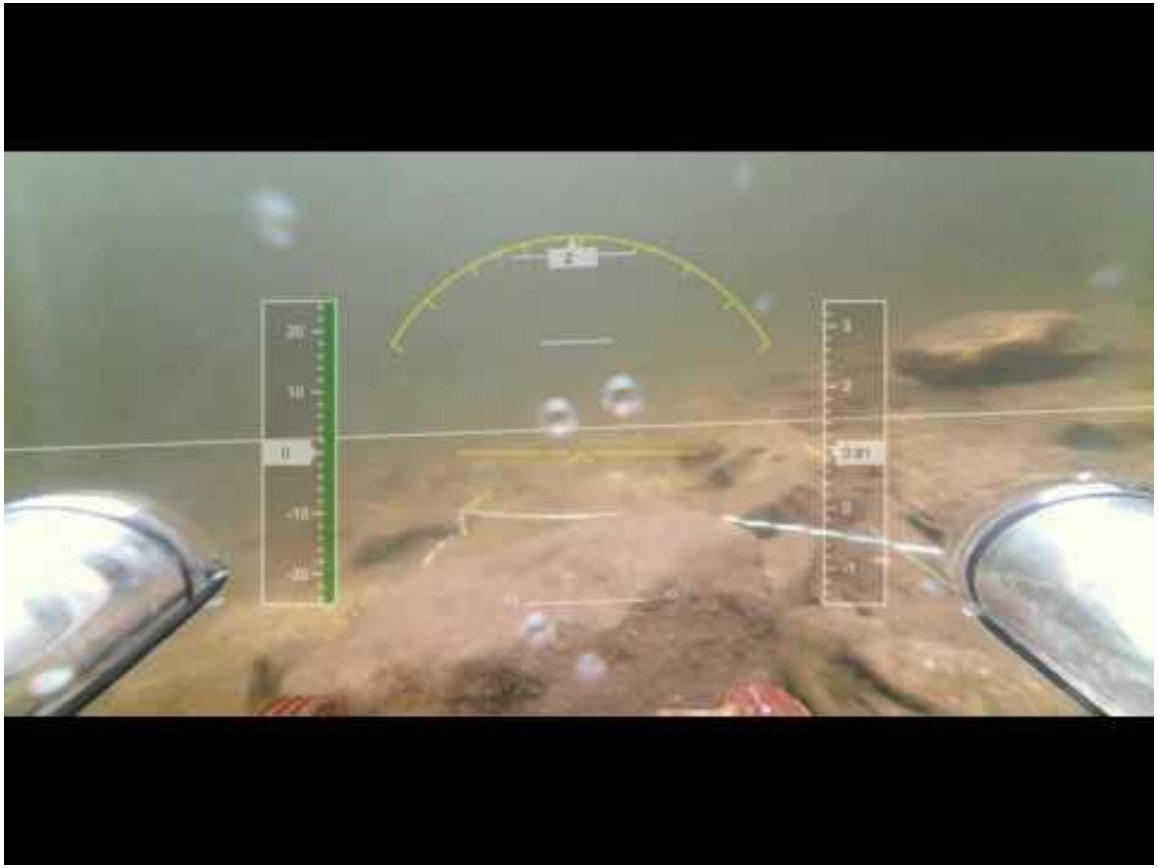
Specification	Goal	Actual
Battery Life	~3h	2.2h
Wi-Fi Range	<300ft	250ft
Depth	20ft	<20ft
Video Quality	High Quality	=1080p Full HD at 30fps

Proposed FPR Deliverables

- Successful lake test for the ROV
- Fully integrated ballast system
- Finalized Wi-Fi setup and buoy design
- HD video capture and storage capabilities onboard the buoy and computer base station
- Implementation of humidity sensor with UI alert

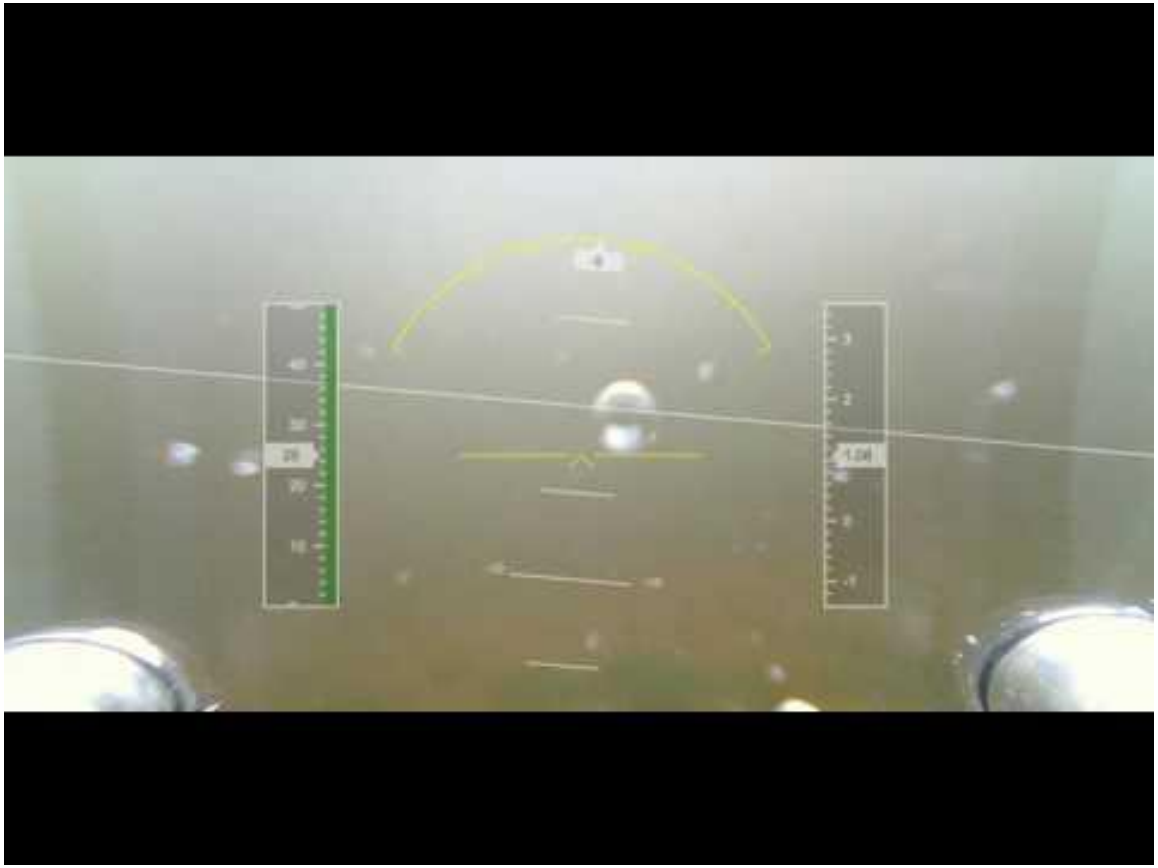
Demonstration

Lake Test - Tethered



Lake Test - Wi-Fi Buoy

Lake Test - Wireless



Piston Ballast

Questions?