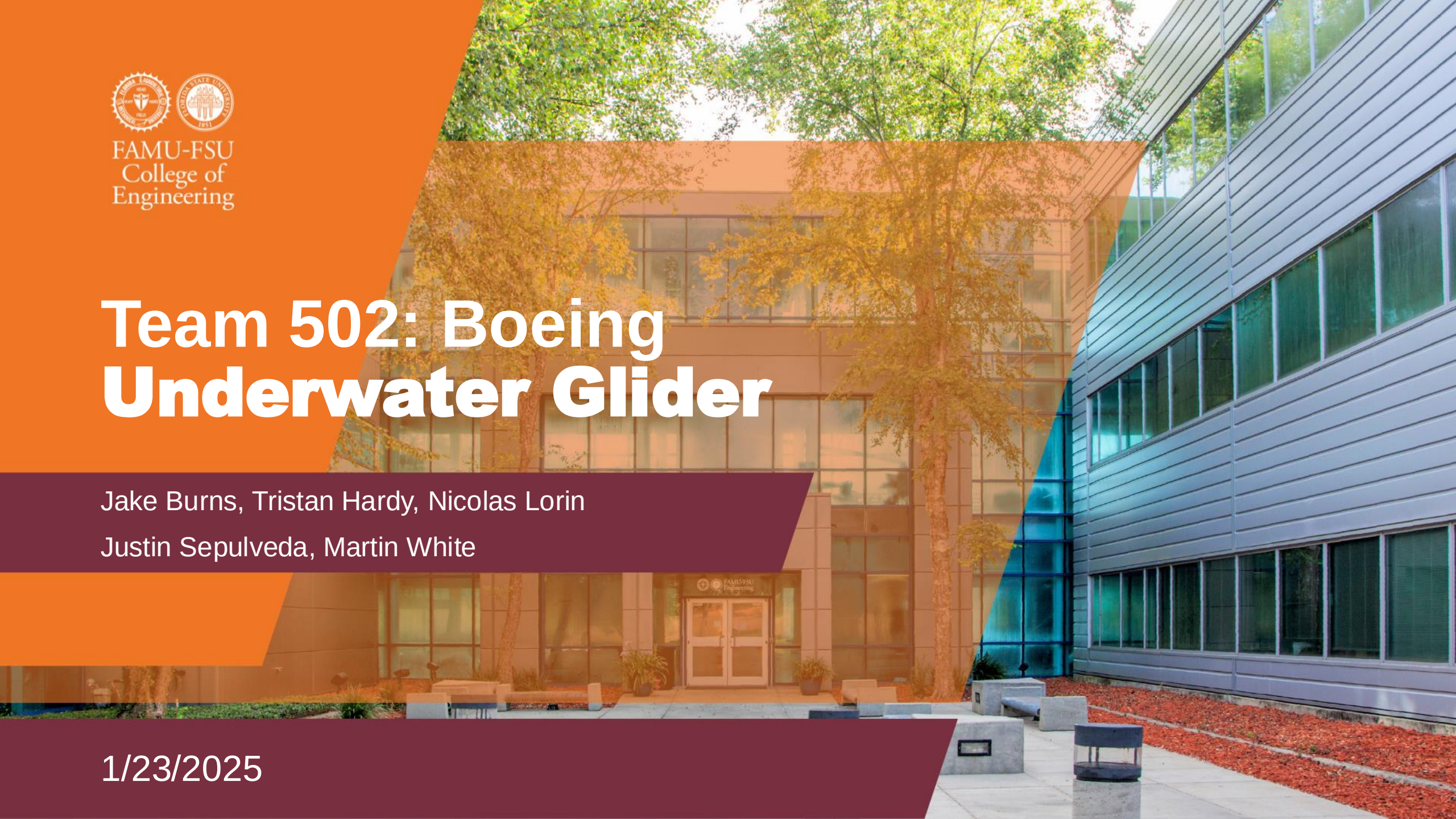

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Team 502: Boeing Underwater Glider

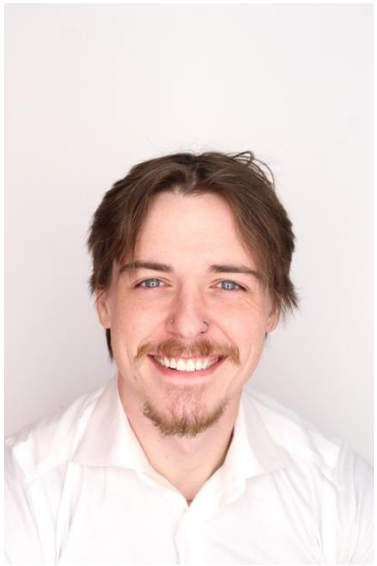
Jake Burns, Tristan Hardy, Nicolas Lorin

Justin Sepulveda, Martin White

1/23/2025

Team Introductions

Jake Burns
Simulations Engineer
Presenting



Tristan Hardy
Modeling Engineer

Nicolas Lorin
Controls Engineer
Presenting

Justin Sepulveda
Systems Engineer

Martin White
Materials Engineer

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Sponsor and Advisor

Project Sponsor
Shawn Butler

Project Sponsor
JaQuan Young

Academic Advisor
Shayne McConomy

Faculty Advisor
Kourosh Shoele

FAMU-FSU College of Engineering

Objective

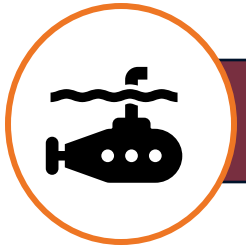
The objective of this project is to simulate and construct an underwater glider.

Jake Burns

Key Goals

Energy efficiency

Data collection



Motion

Durability

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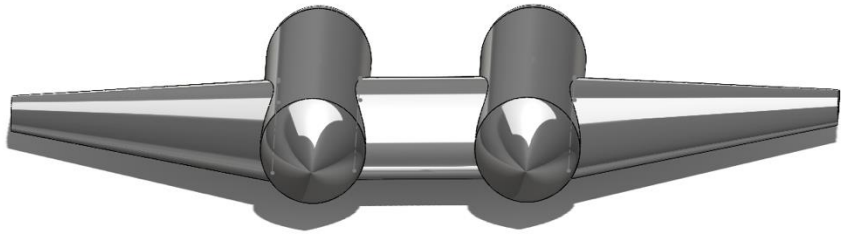
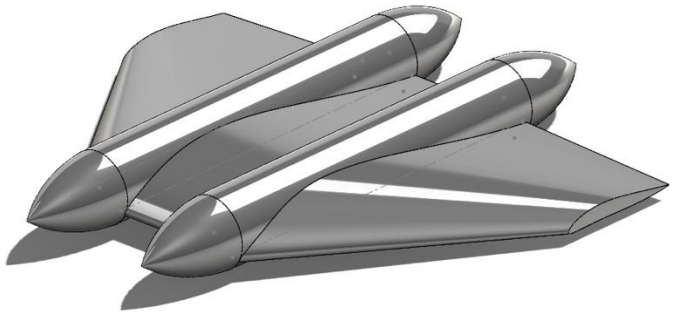
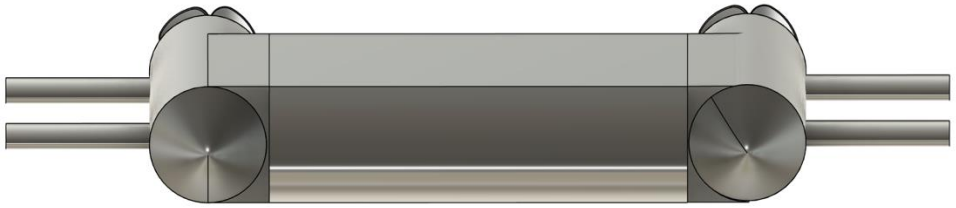
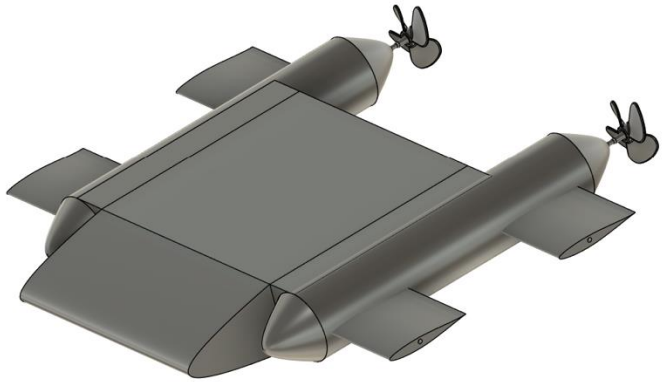
Glider Design Update





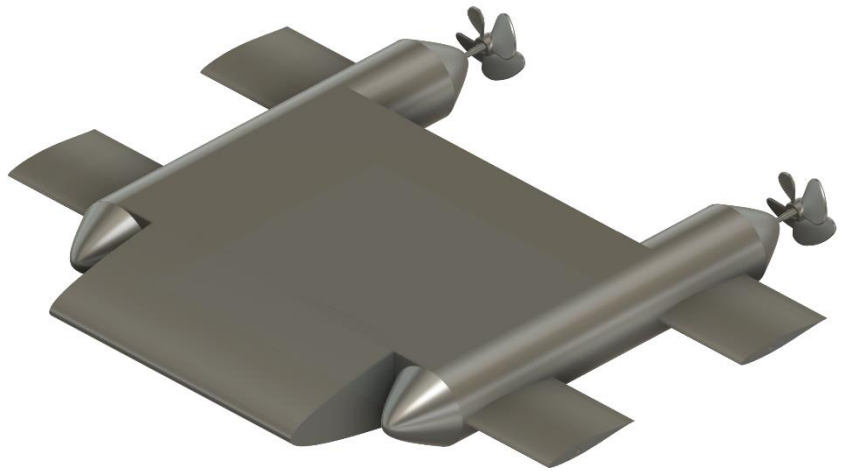
Preliminary CAD Design





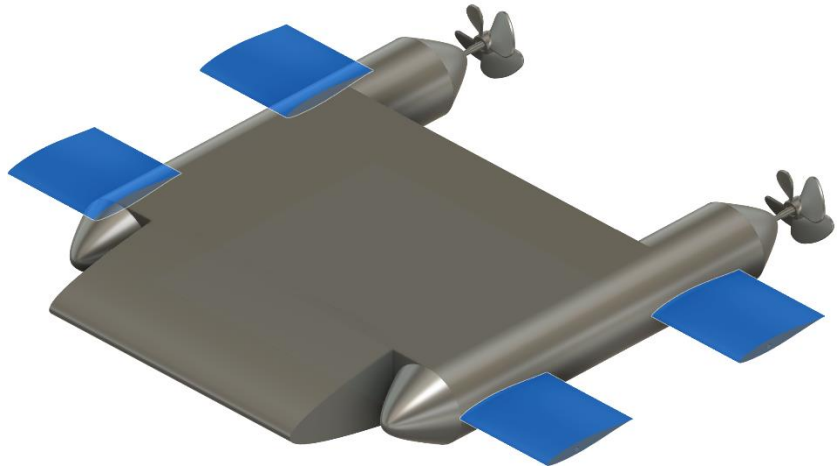
New CAD Design

Design Overview



- No longer buoyancy driven
- Dive planes
- Motor driven propellors
- Sensor suite
- Treated hull

Design Overview



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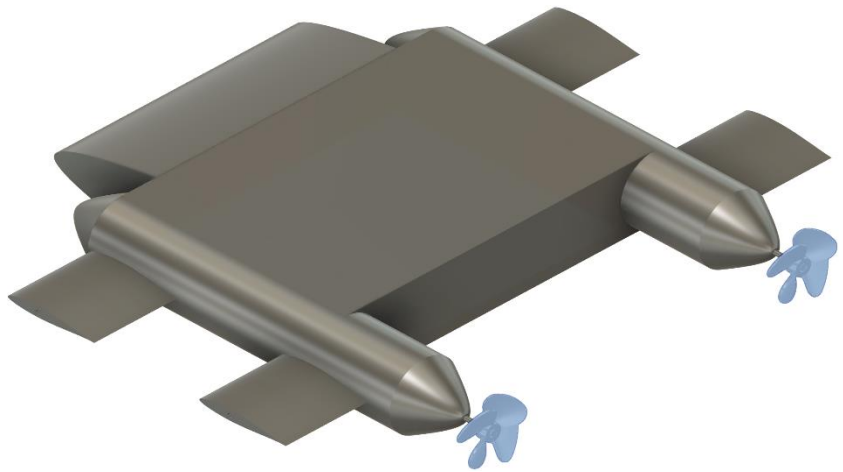
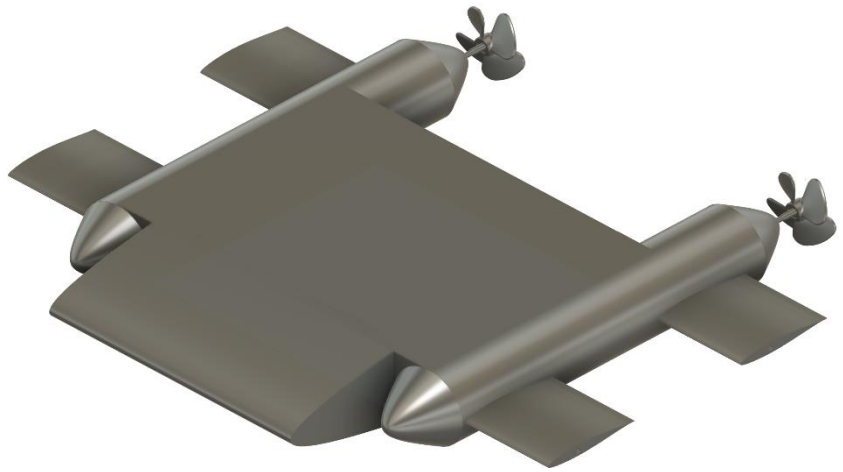
Design Overview



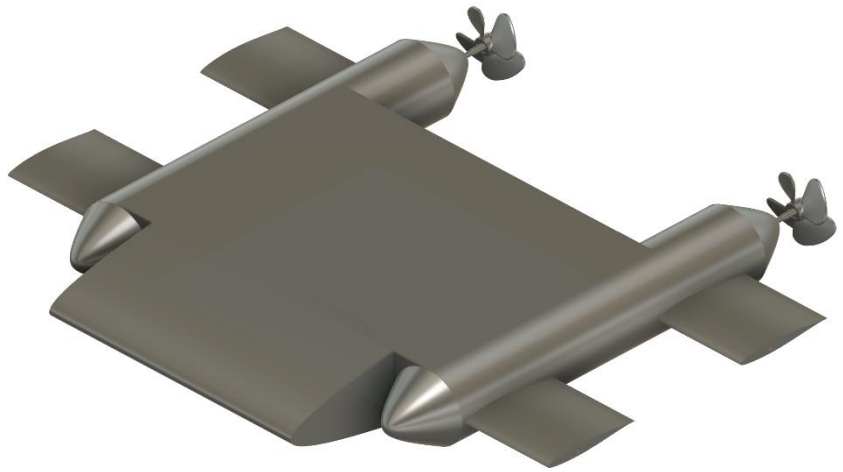
- No longer buoyancy driven
- Dive planes
- **Motor driven propellors**
- Sensor suite
- Treated hull

Design Overview



- No longer buoyancy driven
- Dive planes
- Motor driven propellors
- **Sensor suite**
- Treated hull

Design Overview



- No longer buoyancy driven
- Dive planes
- Motor driven propellors
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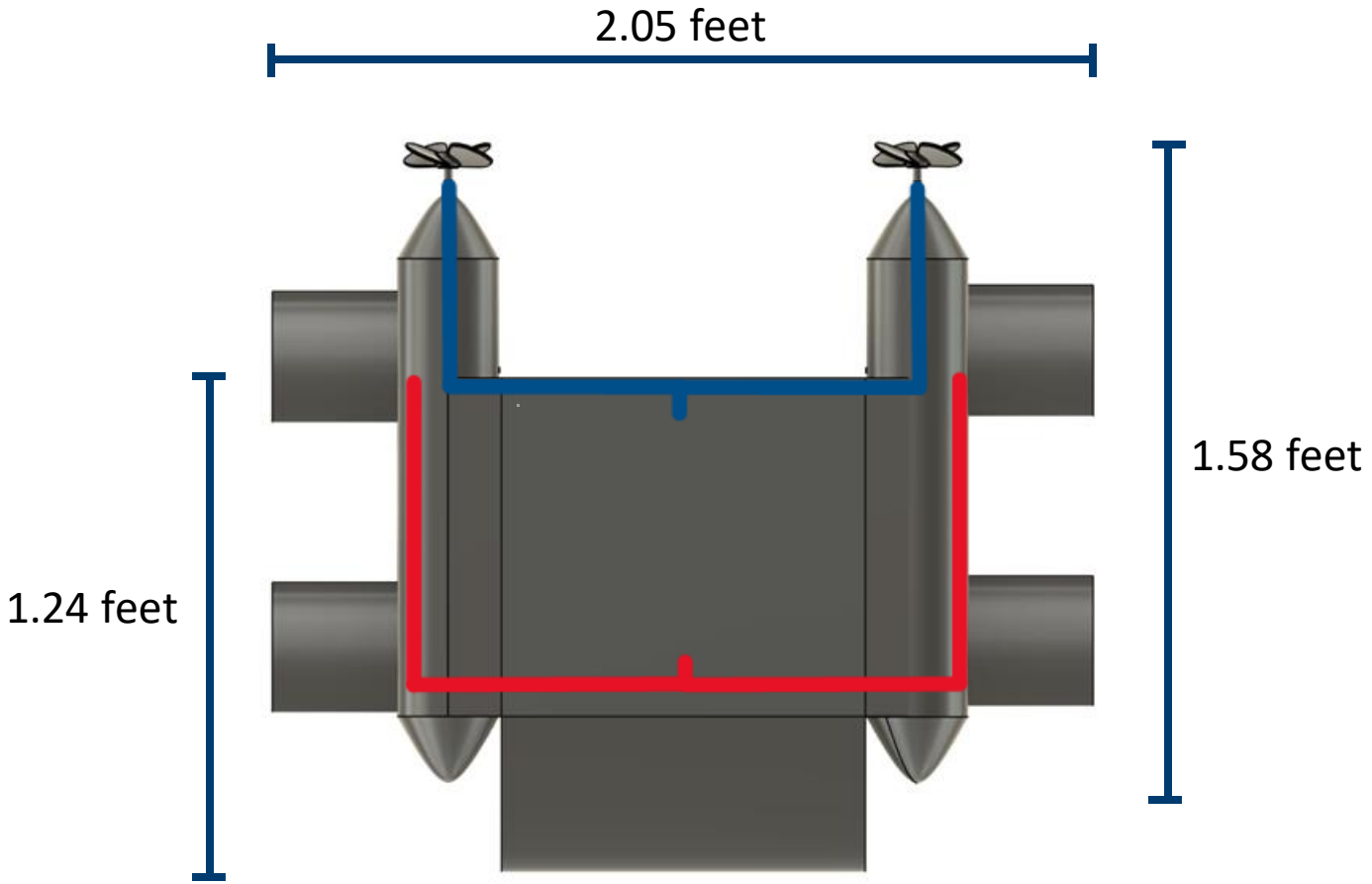
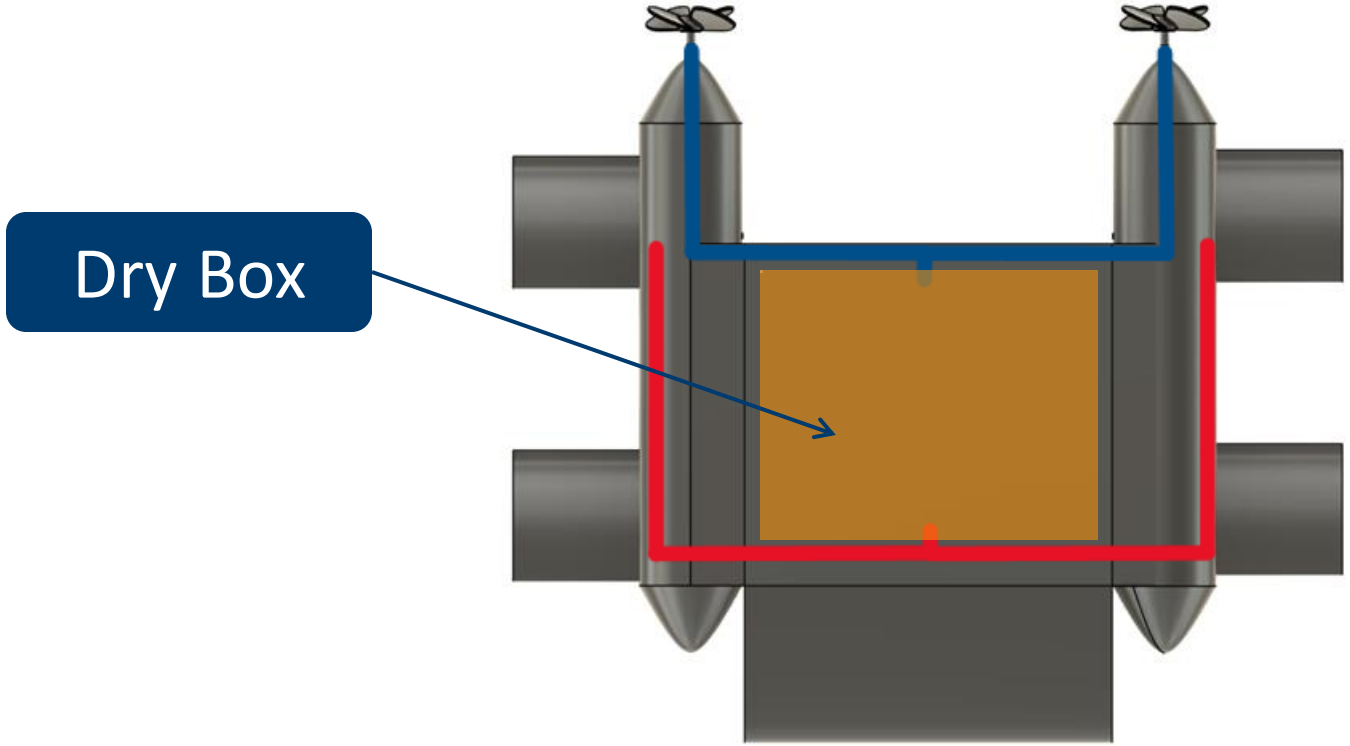
Interior Layout

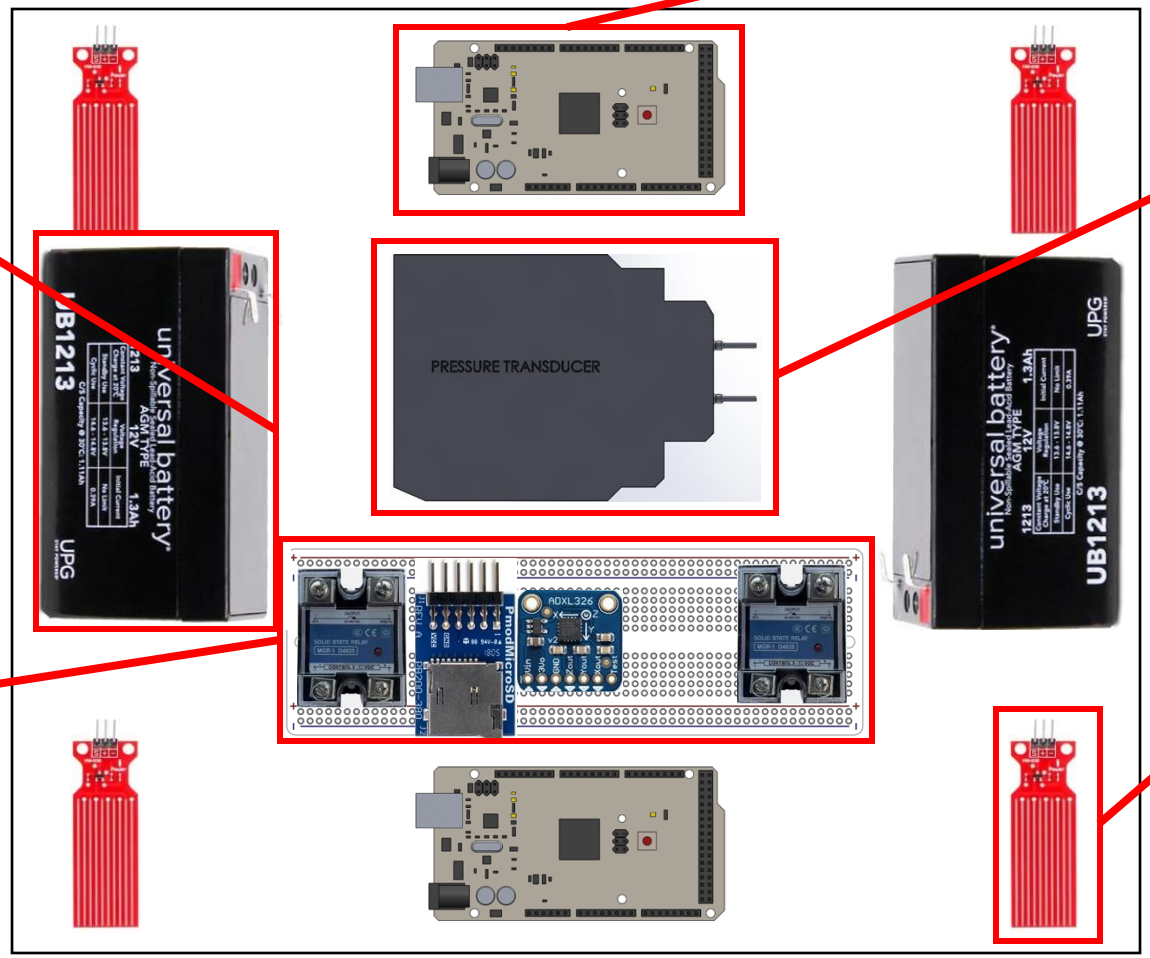


Interior Layout



Nicolas Lorin

Dry Box Layout



2 Arduino Megas

2 12V Batteries

Pressure Transducer

Breadboard
- 2 Voltage Relays
- 6 DOF Accelerometer
- MicroSD Connection

Water Sensor

*Not to Scale
*Excluding Wiring and Tubing

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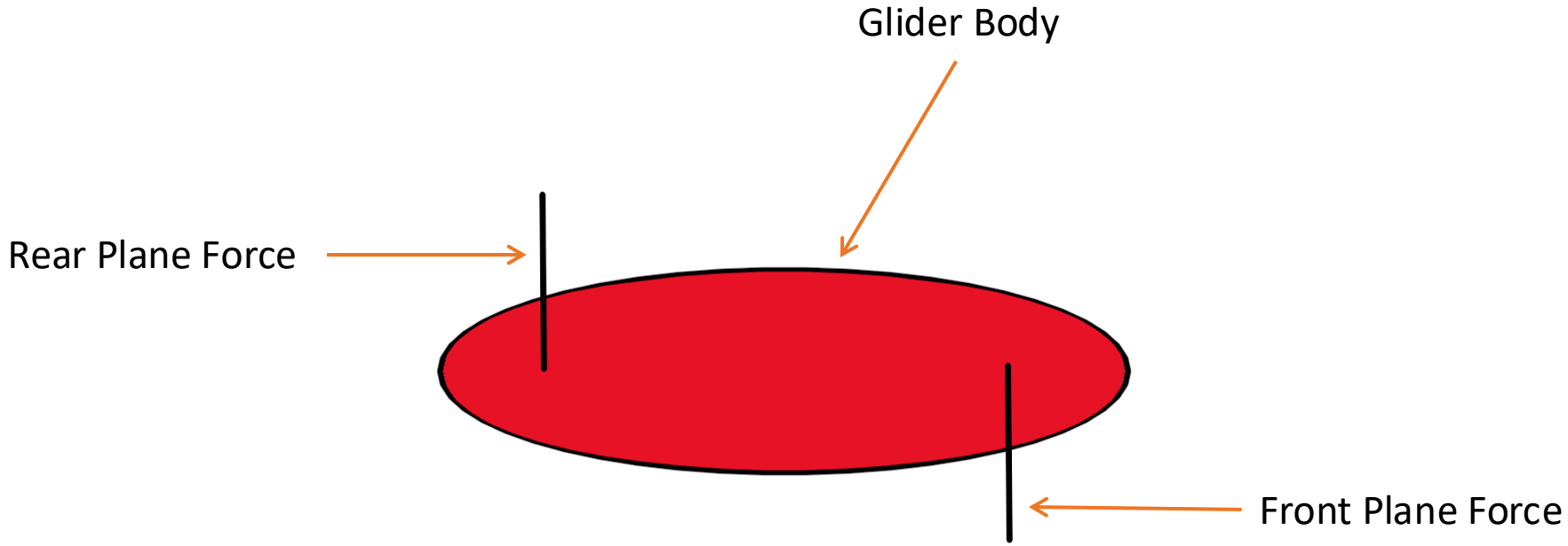
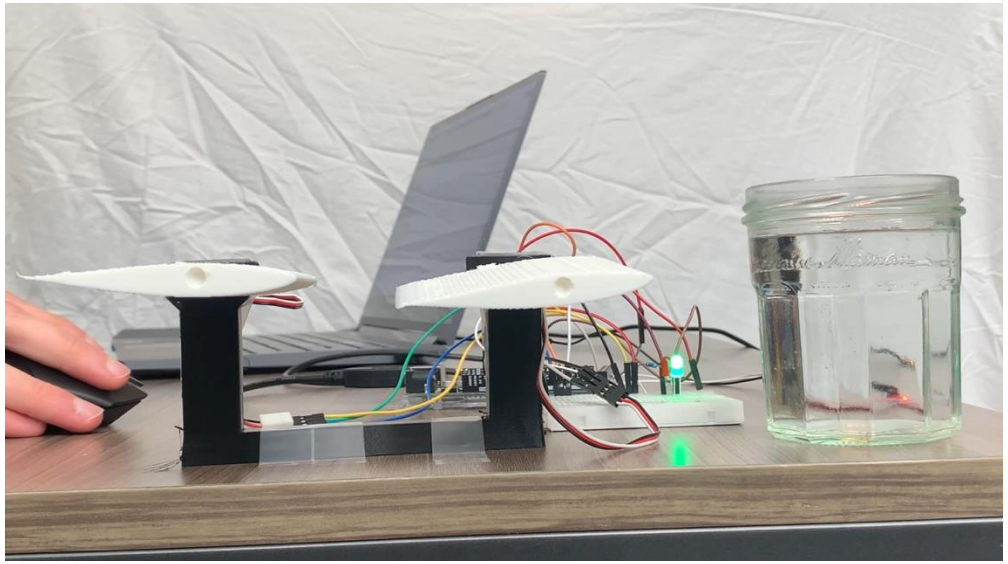
MATLAB Simulation

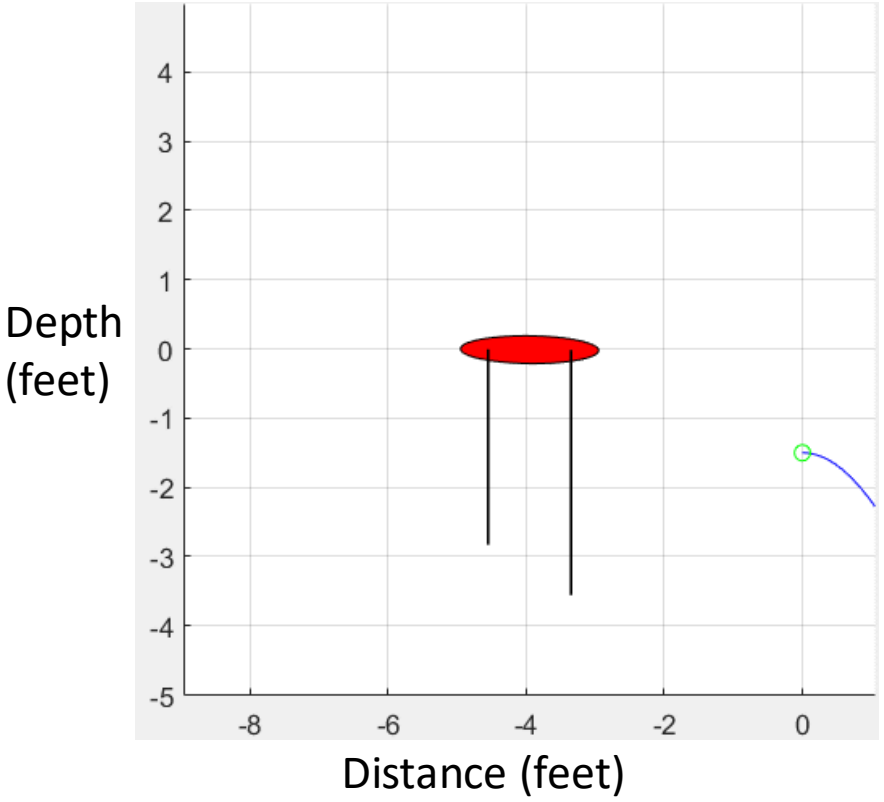


Arduino Implementation

Physical Output

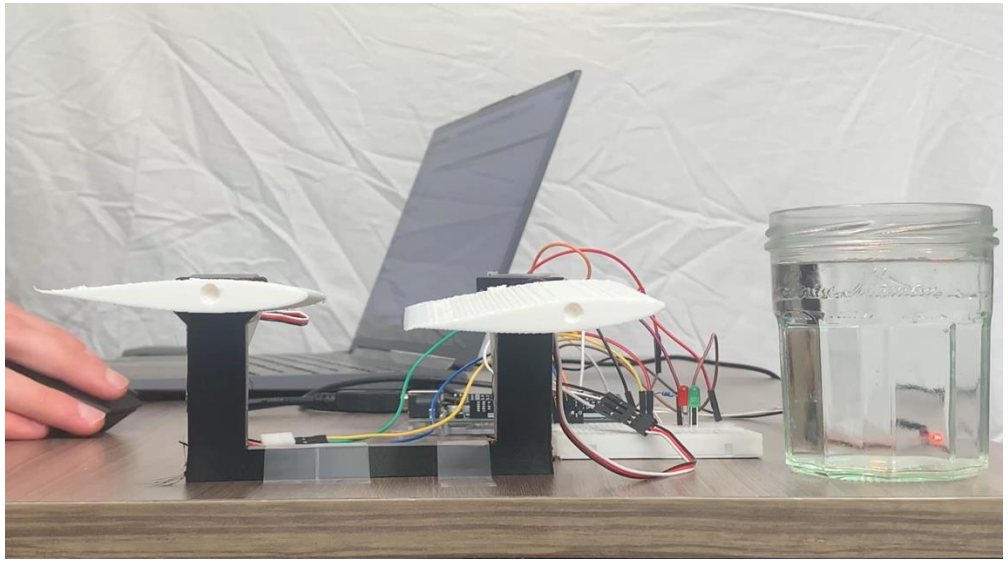


Virtual Simulation

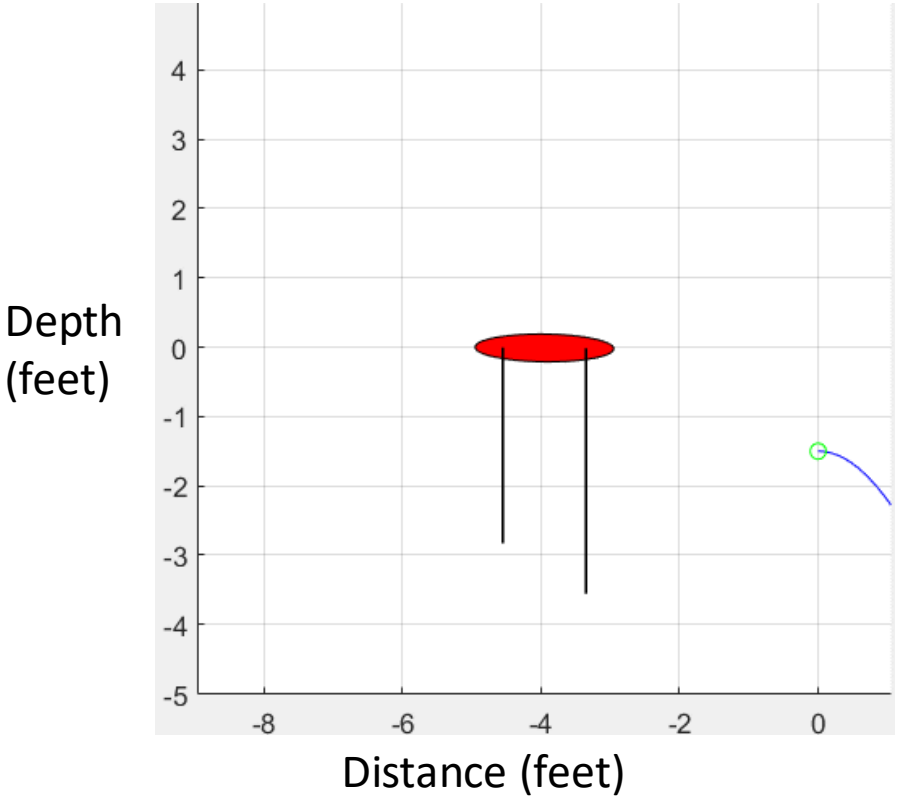


Arduino Implementation Water

Physical Output

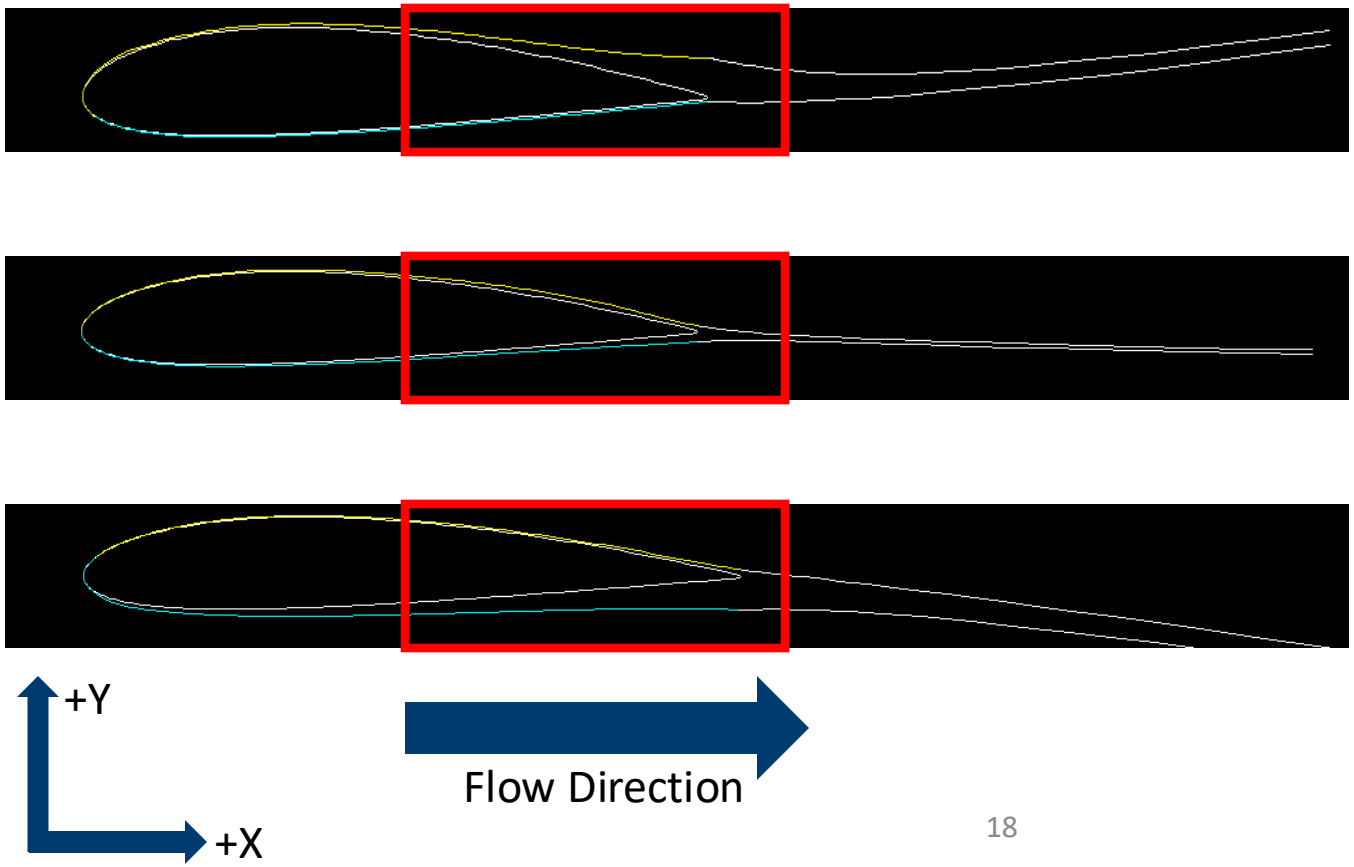


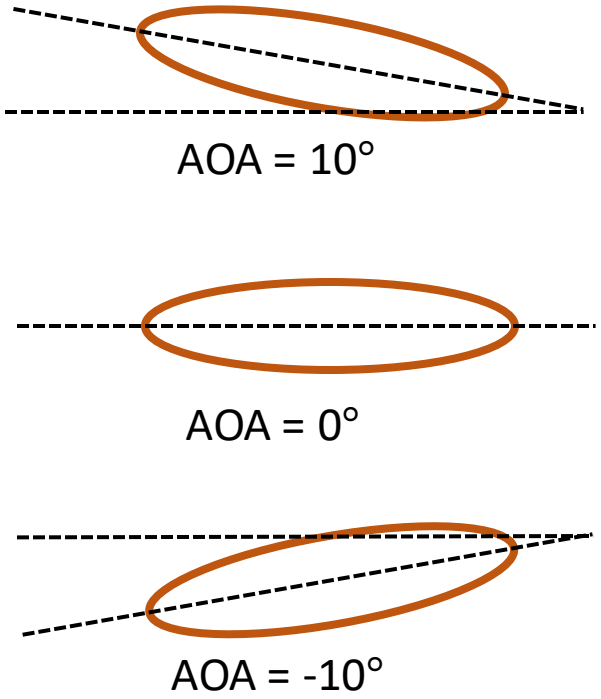
Virtual Simulation



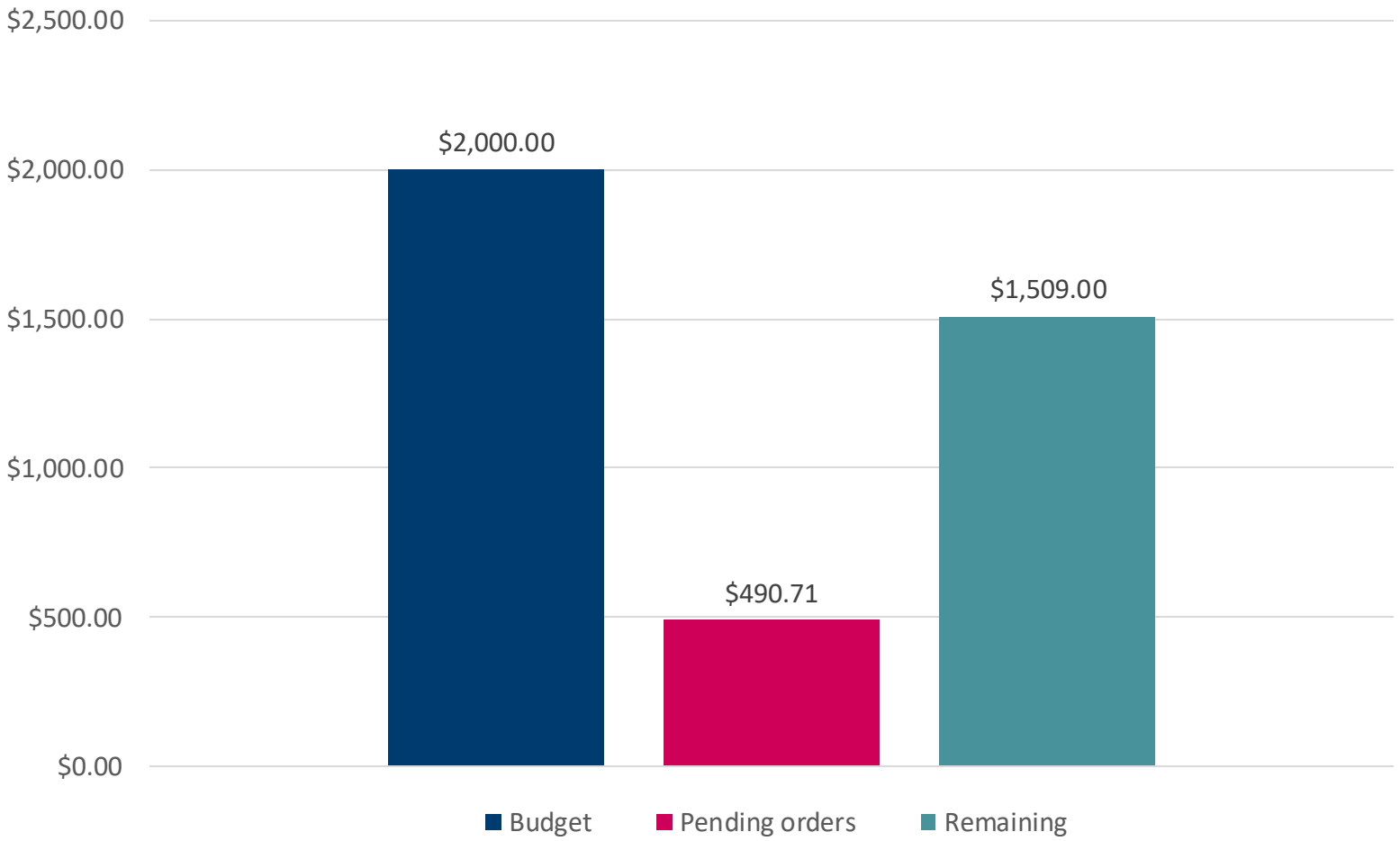
CFD

Airfoil Flow Separation Simulations (Re = $2x10^5$)





Budget


$2,500.00
$2,000.00
$1,500.00
$1,000.00
$500.00
$0.00
$2,000.00
$490.71
$1,509.00
Budget
Pending orders
Remaining

Notable Components

Sensors
$135.90

Motors/Servos
$80.00

Batteries
$15.62

Future Work

Order Parts

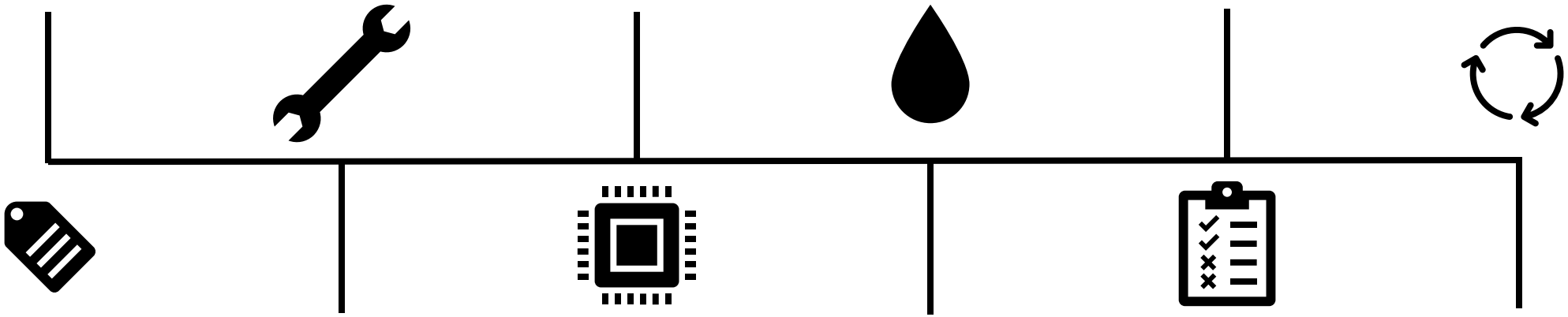
Construction
- 3D Print
- Epoxy Coat

Improve code
- Convert to State Driven Model
- Include Real Numbers

CFD
- 3D Flow Simulation
- Hull Stress Simulation

Testing
- Determine Areas In Need of Improvement

Iteration
- Improve Underperforming Areas



Connect on LinkedIn

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