

Team 21

Autonomous Robosub

Instructors: Dr. Kamal Amin
Dr. Michael Frank

Advisors: Dr. Clark/Dr. Harvey

Team: Santiago Franco, Darryl McGowan,
Kyle Miller, Sondra Miller, Gregory
Robertson, Stuart Royal, Alex Smith

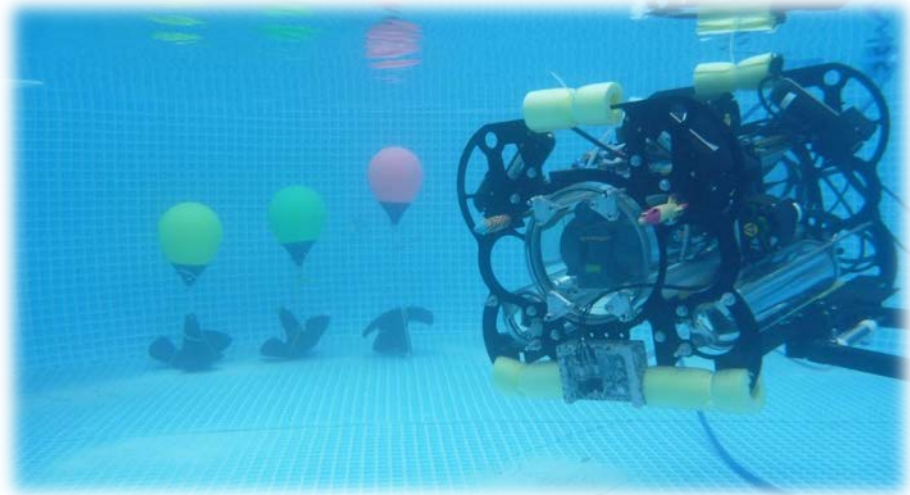
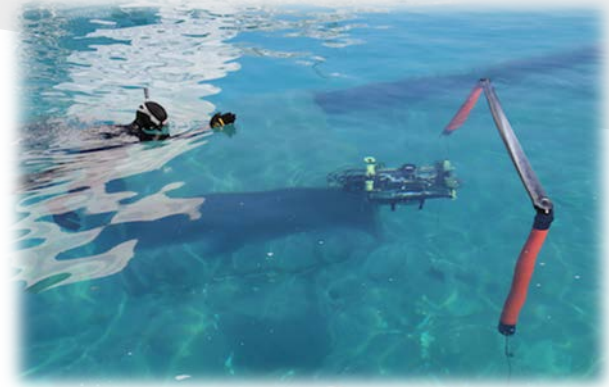
The Competition

- 16th Annual AUVSI RoboSub Competition
- Held in San Diego July 22-28, 2013
- **Goal:** Design and build autonomous submarine able to complete competition tasks
- **Equipment:** Thrusters, sensors, cameras, microcontrollers, and computer



Competition Tasks

- ◉ Gate
- ◉ Buoy bumping
- ◉ Follow path
- ◉ Drop markers
- ◉ Pick up wreath
- ◉ Fire torpedoes

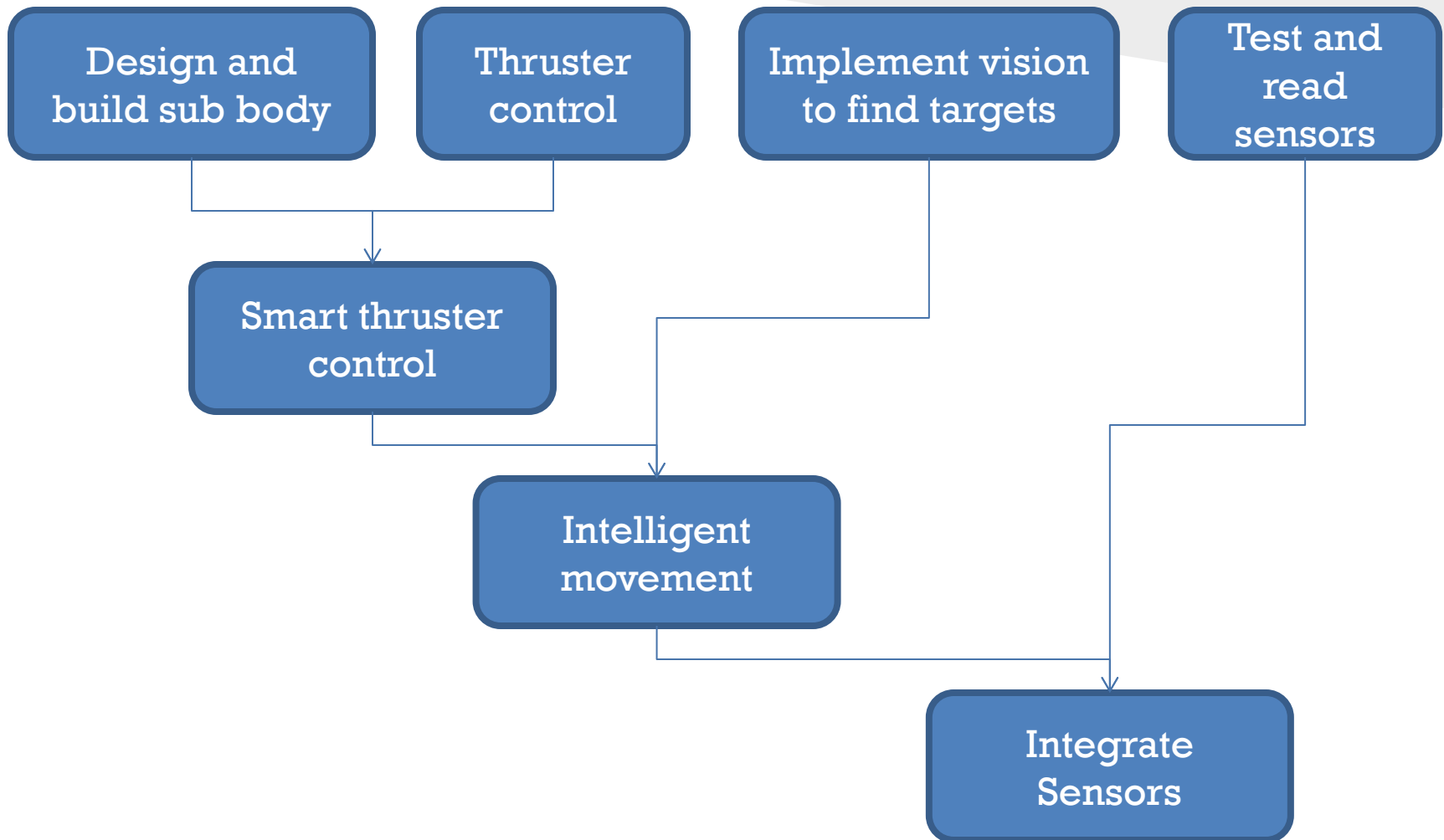


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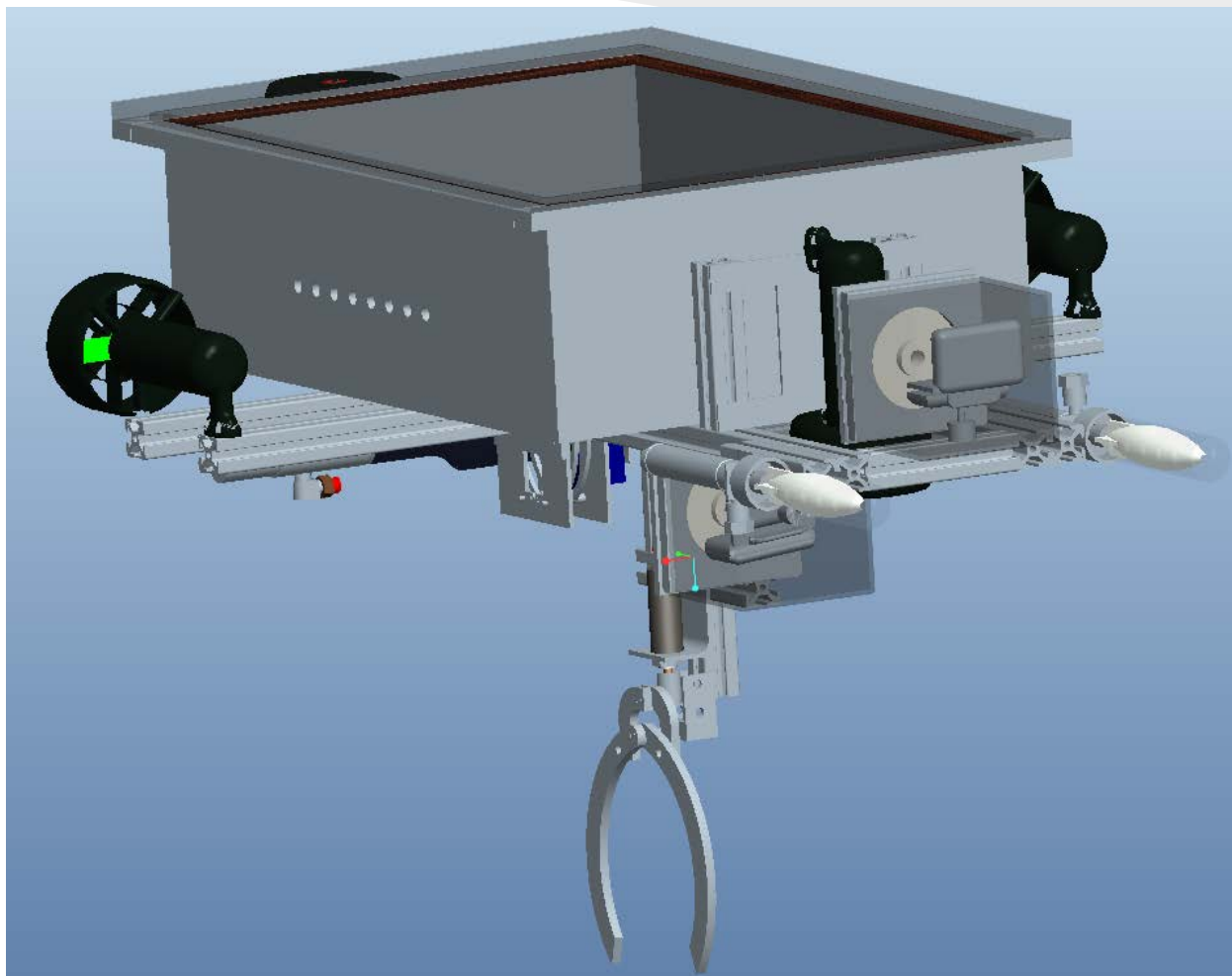
Progress Overview

Santiago Franco, Stuart Royal,
and Sondra Miller

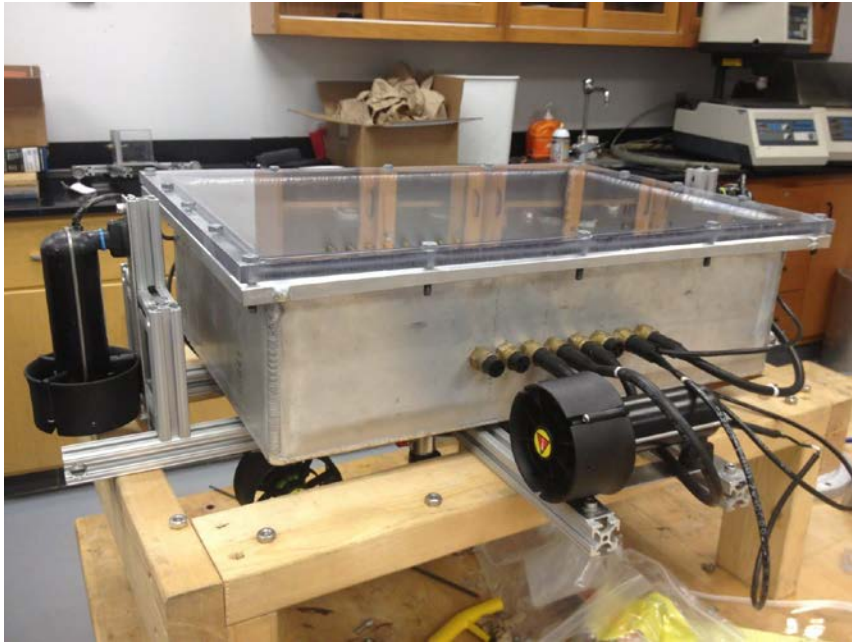
Design Process



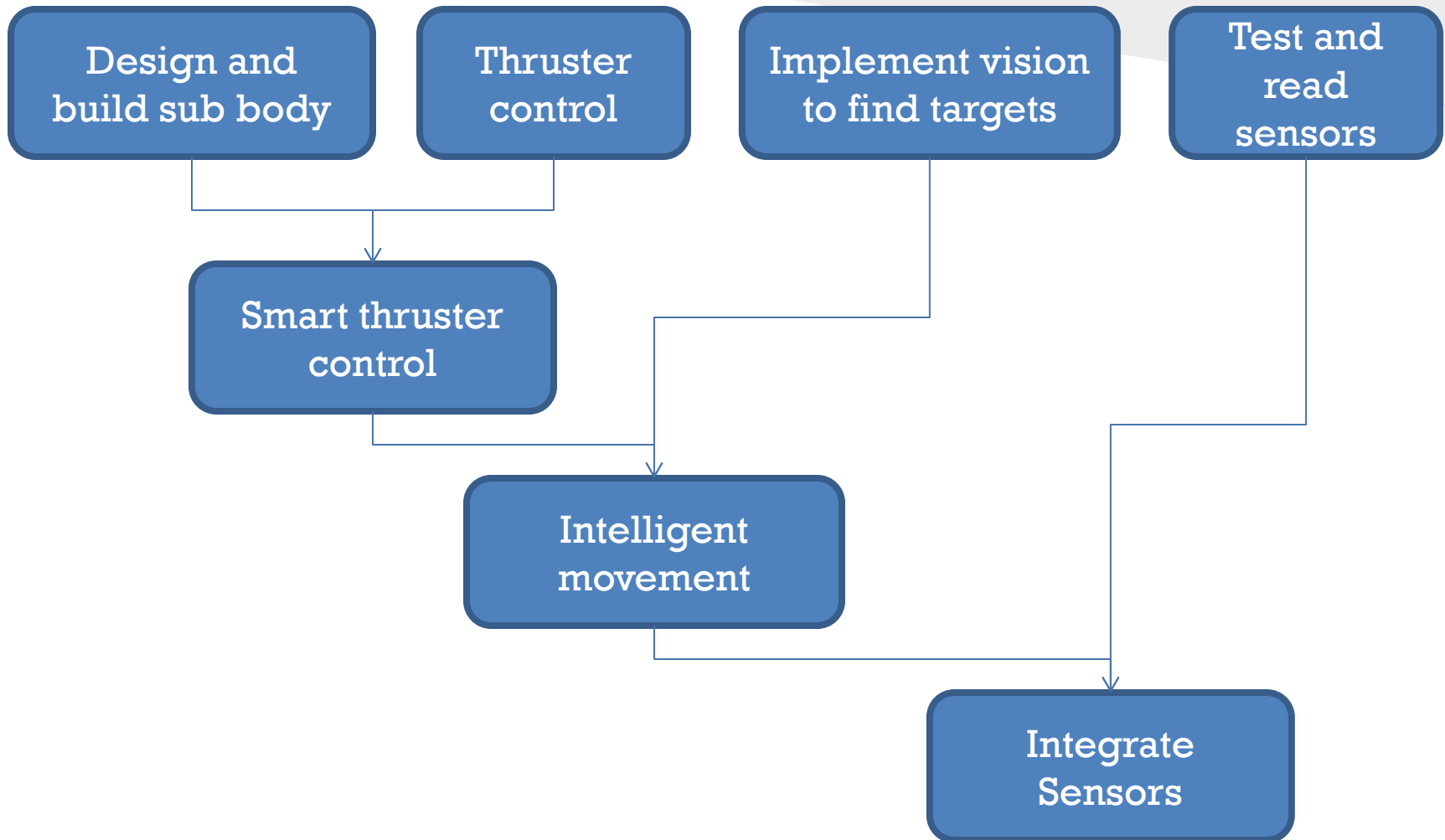
Final Design: CAD Model



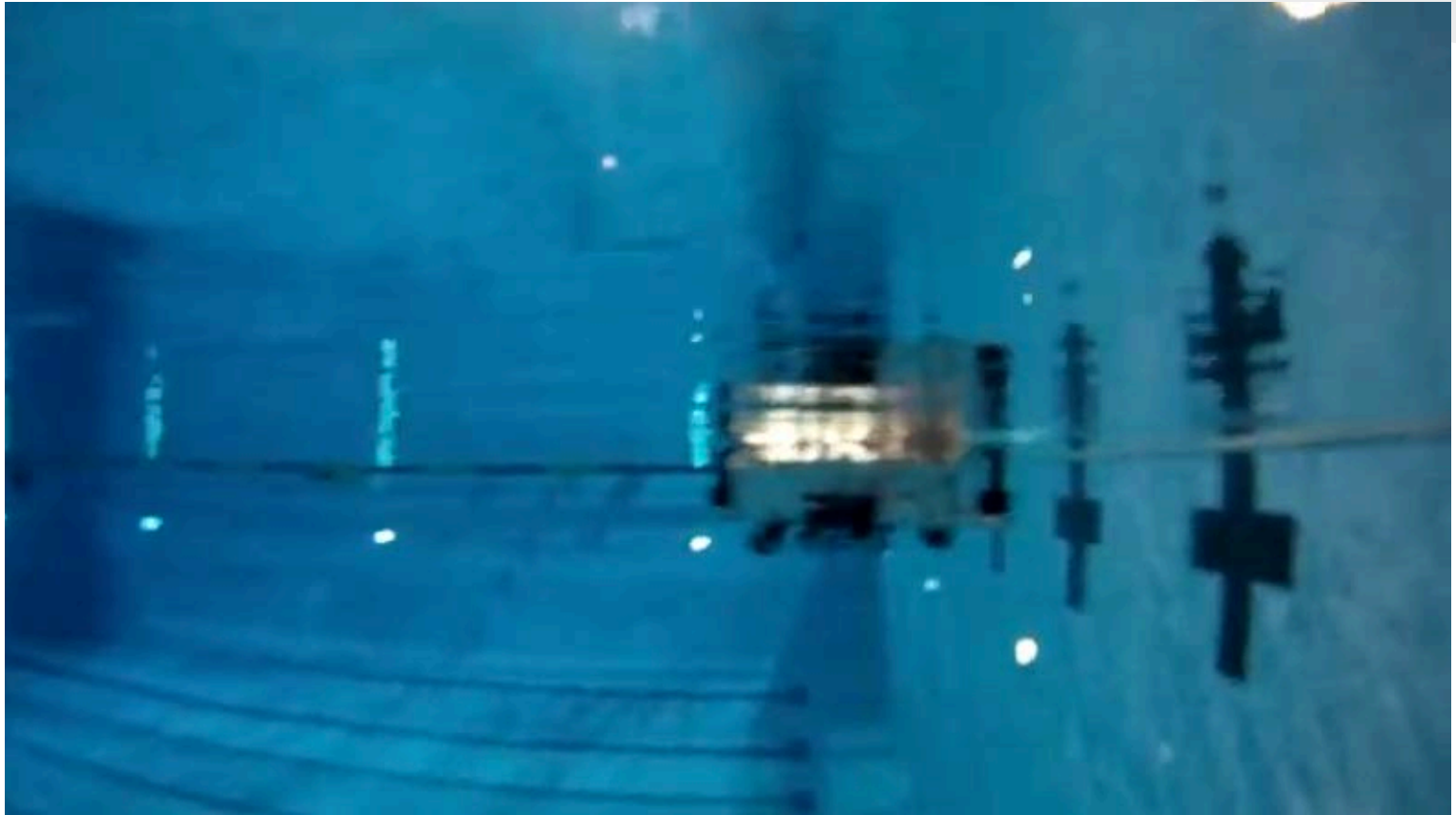
Final Design: Actual Photos



Design Process



Video of Sub Moving

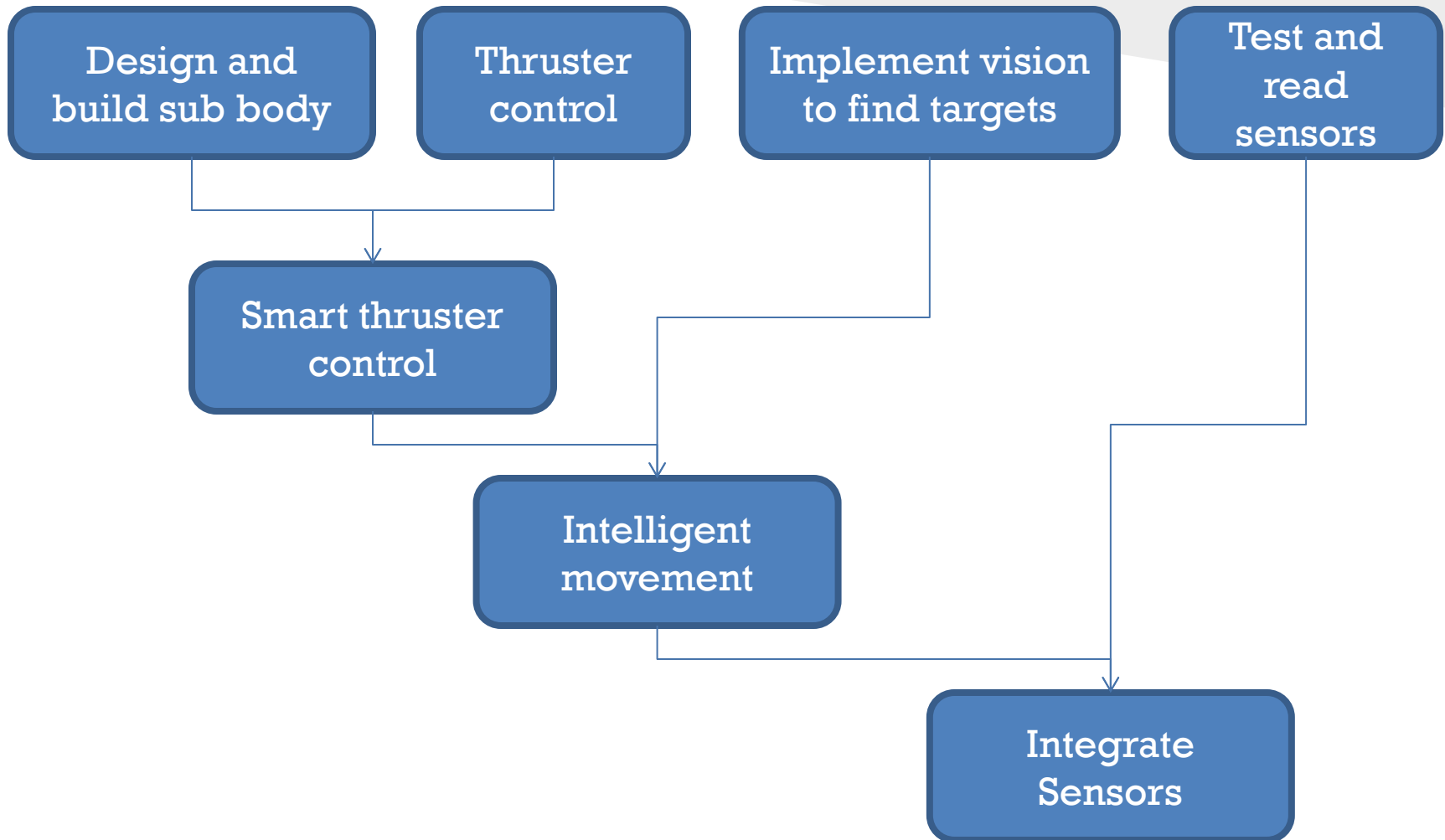


Thruster Details

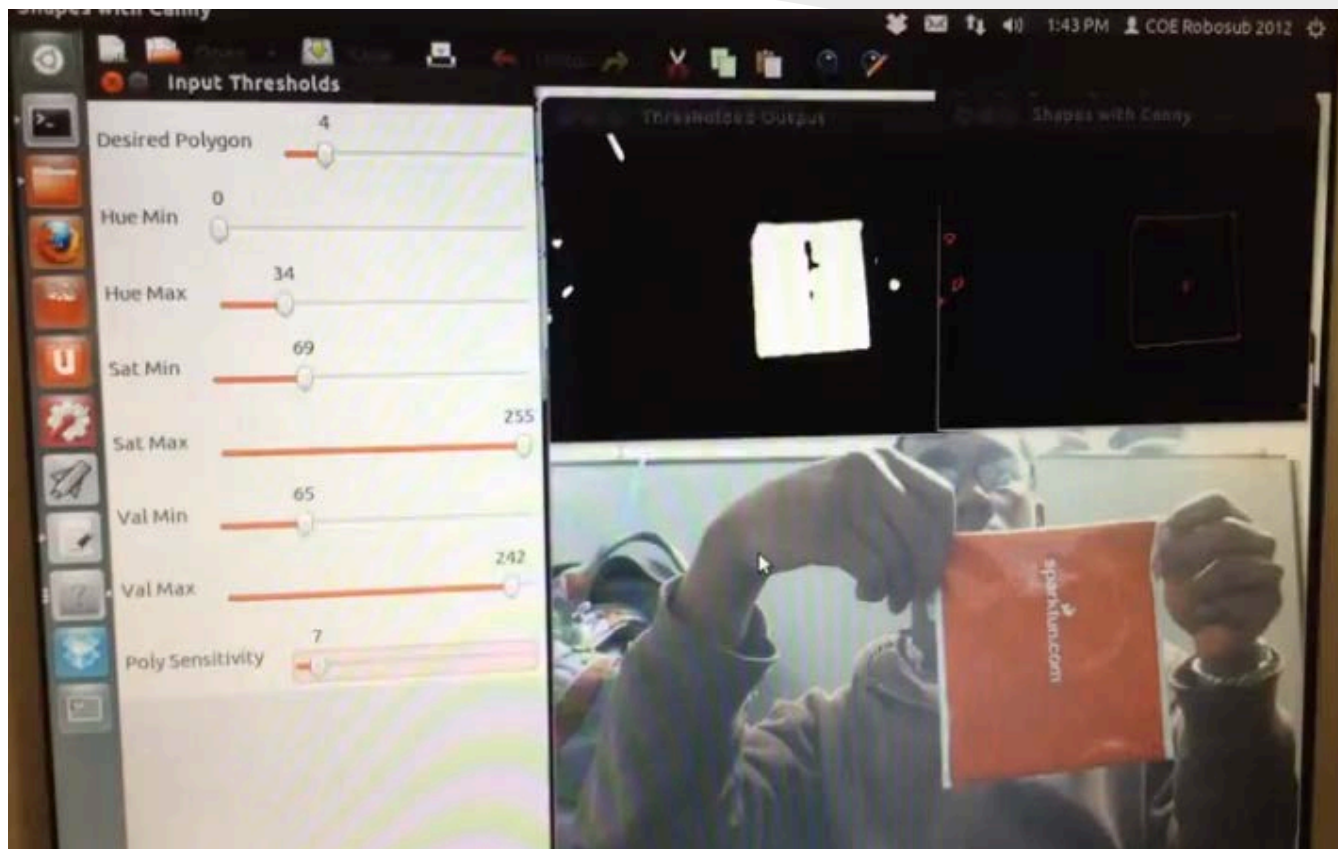
- Thruster research and analysis was done on their capabilities.
- There is a linear relation between voltage and thrust as well as voltage and current draw.

Voltage	Thruster 0109 (old)	A_for_0109	Thrust (lb)_for_0109	A_back_0109	Thrust (lb)_back_0109
0		0	0	0	0
1		0.43	0	0.52	0
2		0.72	0	1	0
18		3.82	2.6875	4.02	2.8125
19		4.1	2.8125	4.24	3

Design Process

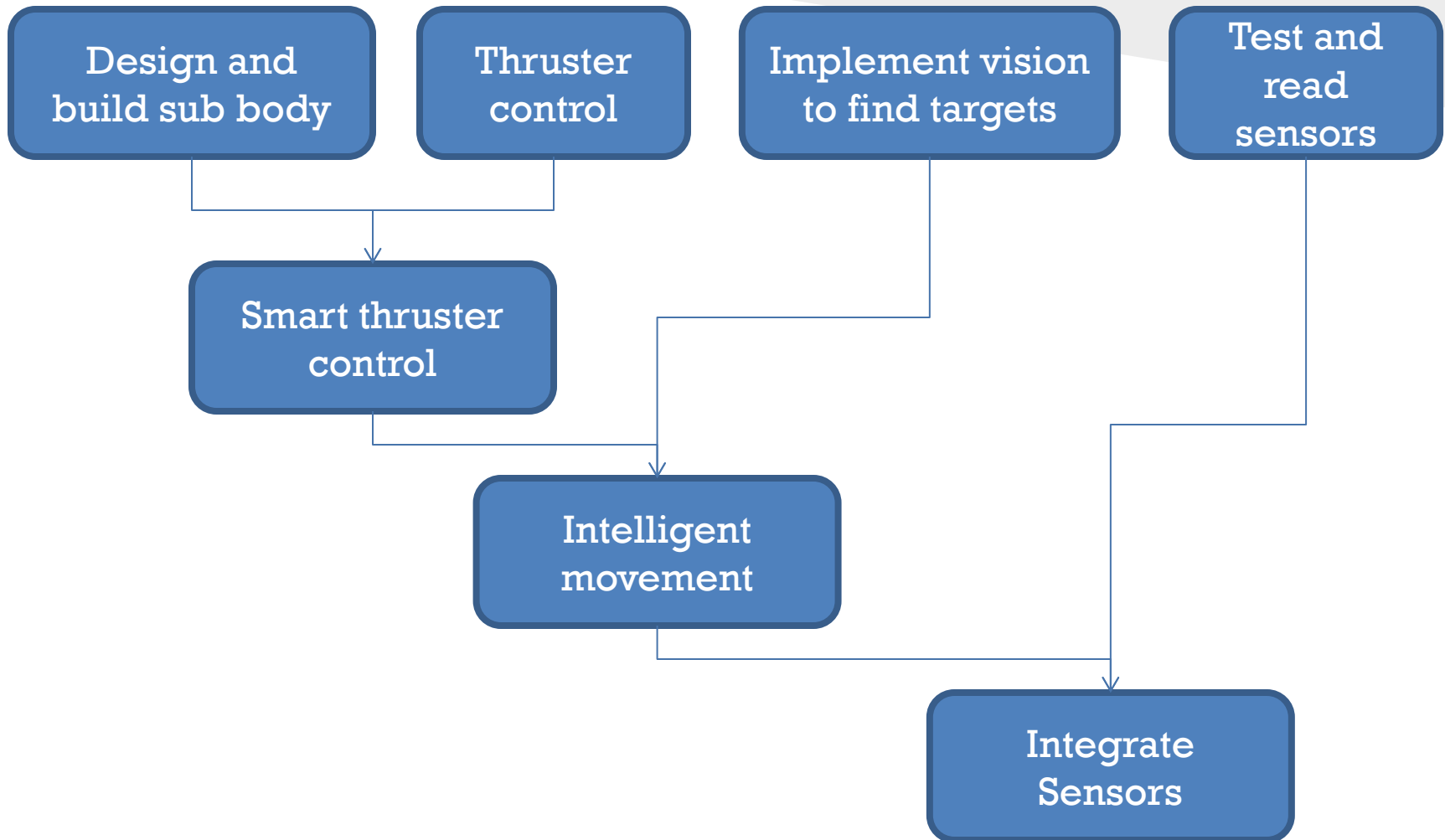


Video of Object Recognition



Next Steps

Design Process



Next: Intelligent Movement

1. Determine target location in vision system
2. Send target location to thruster controller
3. Implement thruster control algorithm
 - Experimental measurements and calculations

Challenges

Alex Smith and Darryl McGowan

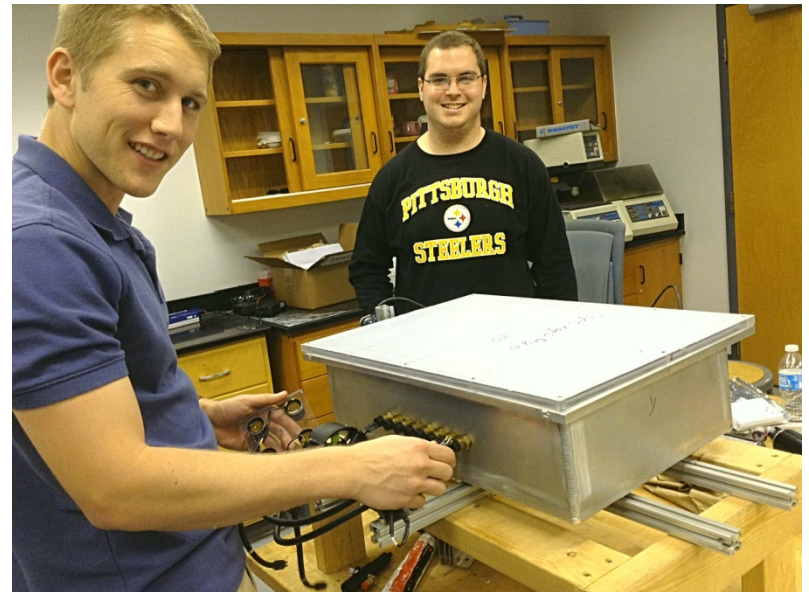
Challenges

- ◉ Establish reliable communication between devices
- ◉ Develop system decision-making algorithms
- ◉ Develop a thruster control algorithm for precise movement
- ◉ Create and test obstacles similar to competition



Schedule

- ◉ Continue development and testing of sub
- ◉ Present at FSU DIGITECH on March 29
- ◉ Prepare for Open House
- ◉ **Goal: Compete!**



References

Kelly, Kurran, and Pedrow Brandt. *Robosub AUV Thruster Analysis*. Rep. RoboSub Club of the Palouse, 7 Dec. 2012. Web. 16 Mar. 2013.

Questions?

Ask away!

