

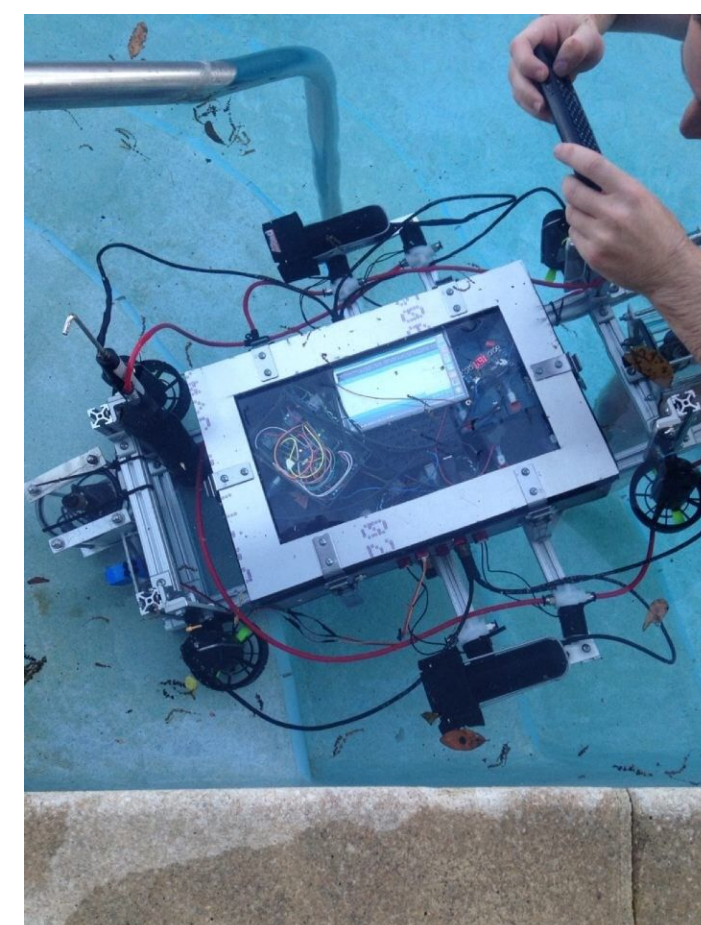
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Advisor: Dr. Bruce Harvey

Background

- Autonomous Underwater Vehicle (AUV) designed for annual AUVSI RoboSub competition
- Competition rules set the design constraints for the project
- Awarded points for successfully performing competition tasks: shape/color recognition, alter speed/direction/depth, grip/place objects, fire torpedos, drop markers

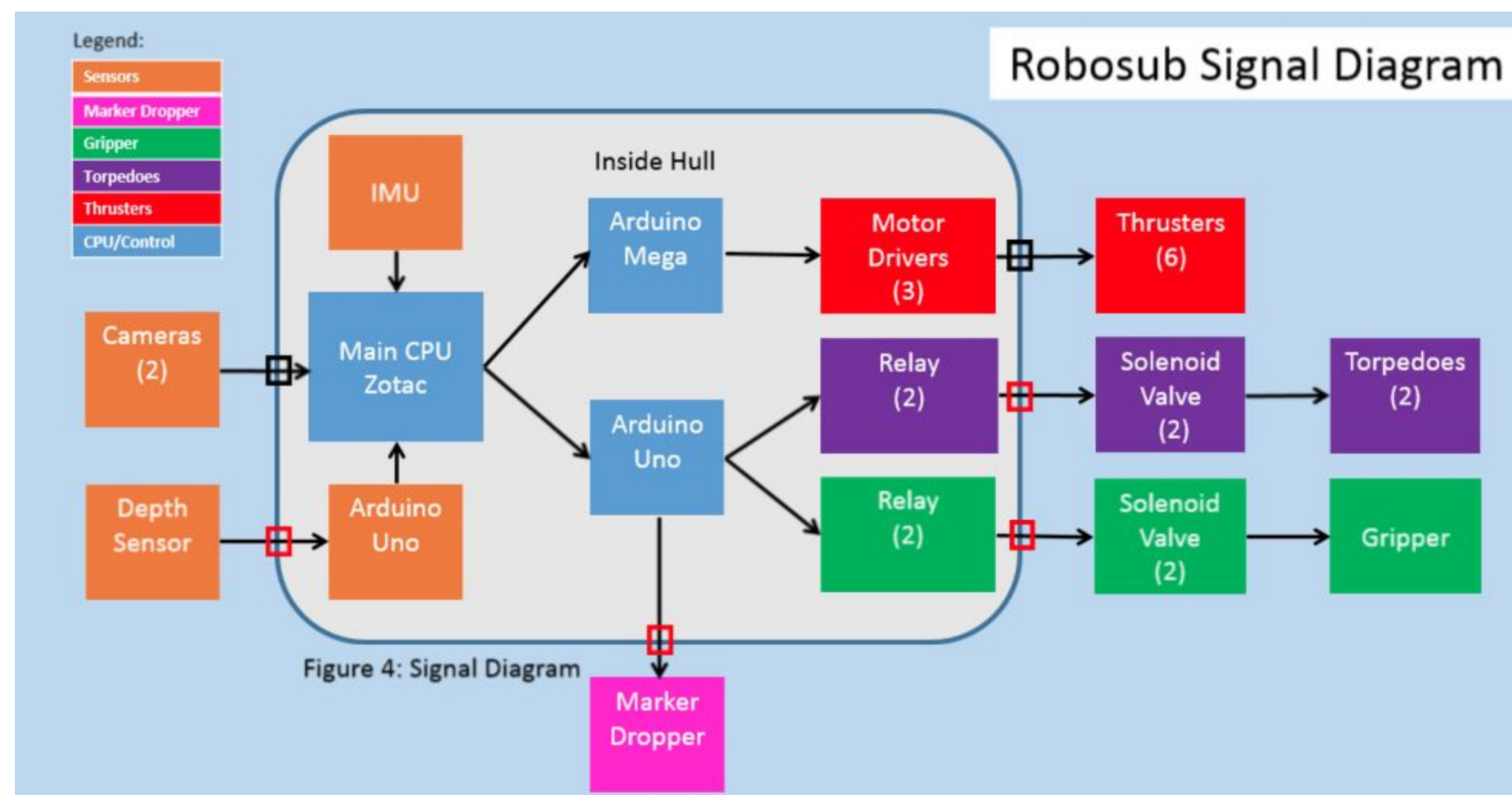
Design Requirements

- Weigh under 125 lbs
- Under 6' x 3' x 3'
- Have total killswitch
- Buoyant to 0.5% weight once killswitch activated
- Autonomous navigation of predetermined course

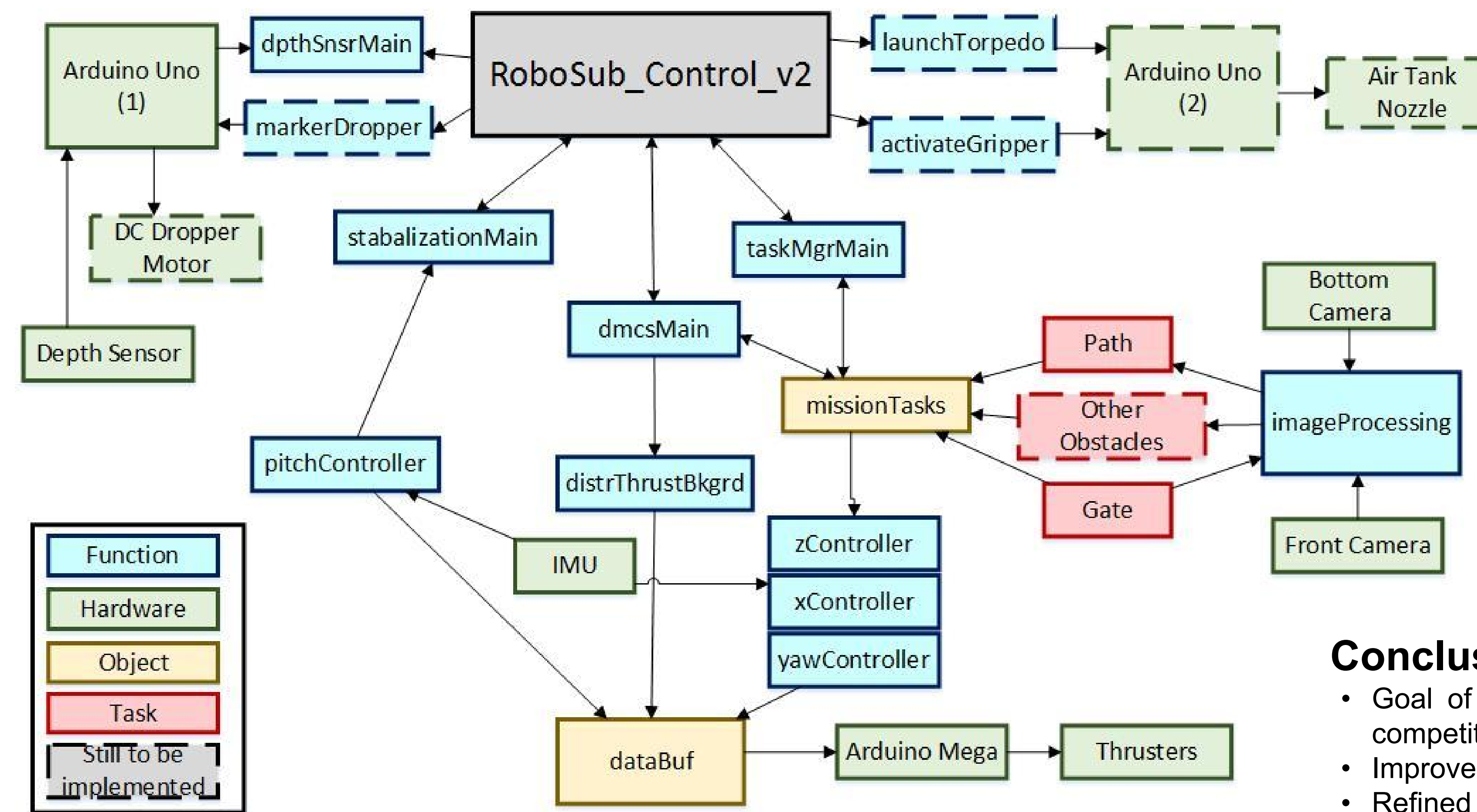


Current Hardware Design

- Arduino Mega and 2 Arduino Unos implement software to hardware
- Cameras mounted to front and back of sub for object identification and path following



- Internal weight distribution must be even for accurate movement in the water
- Air actuation system for task implementation
- 4 vertical thrusters; 2 horizontal thrusters



Current Software Design

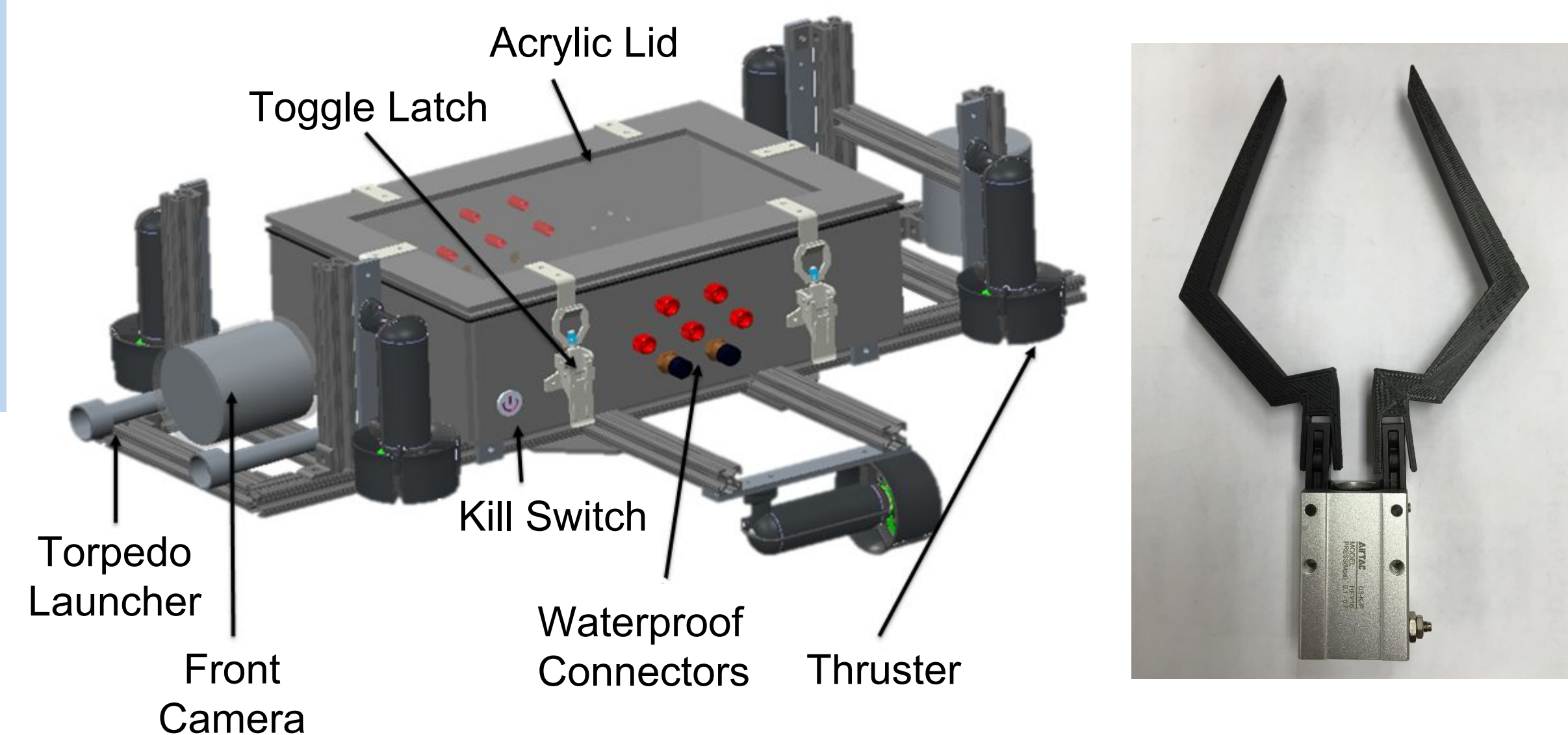
- Image Processing: Fourier Transform function to identify shapes and orientation
- Makes one decision at a time from the current modulation of the program
- The z, x and yaw function controller controls the orientation of the sub
- Thrusters: programmed to take in data from image processing for maneuverability

Conclusion

- Goal of team to compete in AUVSI RoboSub competition
- Improved the software to software interfacing
- Refined hull design
- Designed new subsystems for competition tasks

Improvements made

- PID added to movement controls
- Functioning Claw, Marker Dropper, and Torpedo Firing Mechanisms added
- New hull design for reduced buoyancy
- Modular code design implementation



Team Positions

Travis Hett - Lead ECE; Visual design
Brandon Anderson - Lead ME; Mechanical interface
Laneicia Gomez - Tester; Movement design
Gabriel Mendoza - Tester; Software design