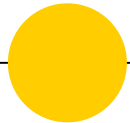


Camp Riley Sailboat Team



*Design Review
Fall 2016 Week
1*

Team Members

Abi Lutes

Industrial Engineering
Senior
Design Lead
Project Partner Liaison

Logan Letner

Electrical Engineering
Senior

Eric Slingo

Acoustical Engineering
Senior
Project Archivist

Shengli Sui

Computer Engineering
Senior
Webmaster

Sukrit Virmani

Electrical Engineering
Senior





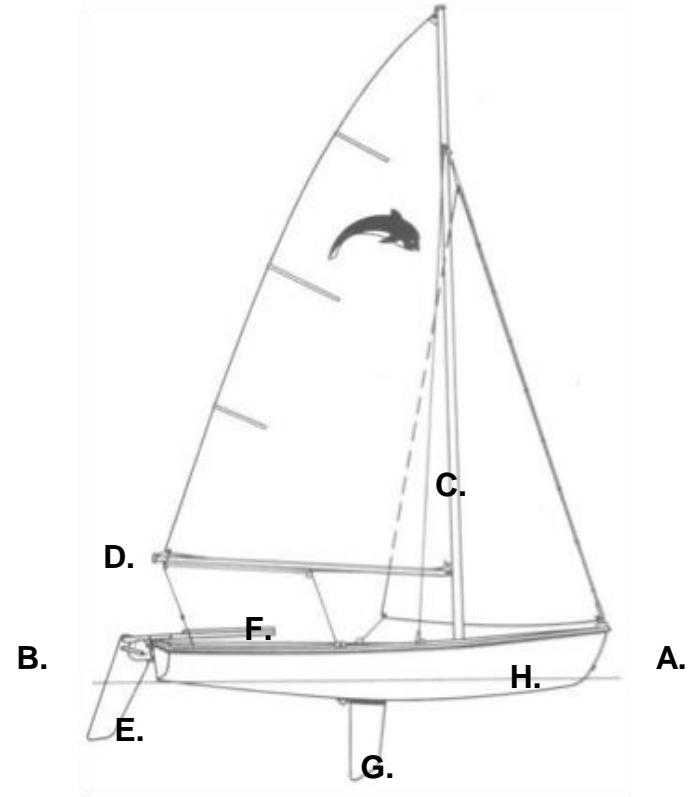
Project Background



- Modify AMF Alcort Puffer Sailboat to be accessible to Bradford Woods campers & integrate it into the already available waterfront activities
- Universal design so that all campers can to steer the boat by controlling tiller movement
- **Stakeholders:**
 - Campers
 - Counselors
 - Bradford Woods
 - Camp Riley
 - Champ Camp

Sailboat

- A. Bow - front of the boat
- B. Stern - rear of the boat
- C. Mast - vertical pole
- D. Boom - horizontal, swinging pole
- E. Rudder - movable steering fin**
- F. Tiller - Handle to steer the rudder**
- G. Centerboard - removable stabilizer
- H. Hull - body of the boat



Boat Overview

Safety of the User

Outriggers for Stability



(2) Universally Adaptable

Seating Options

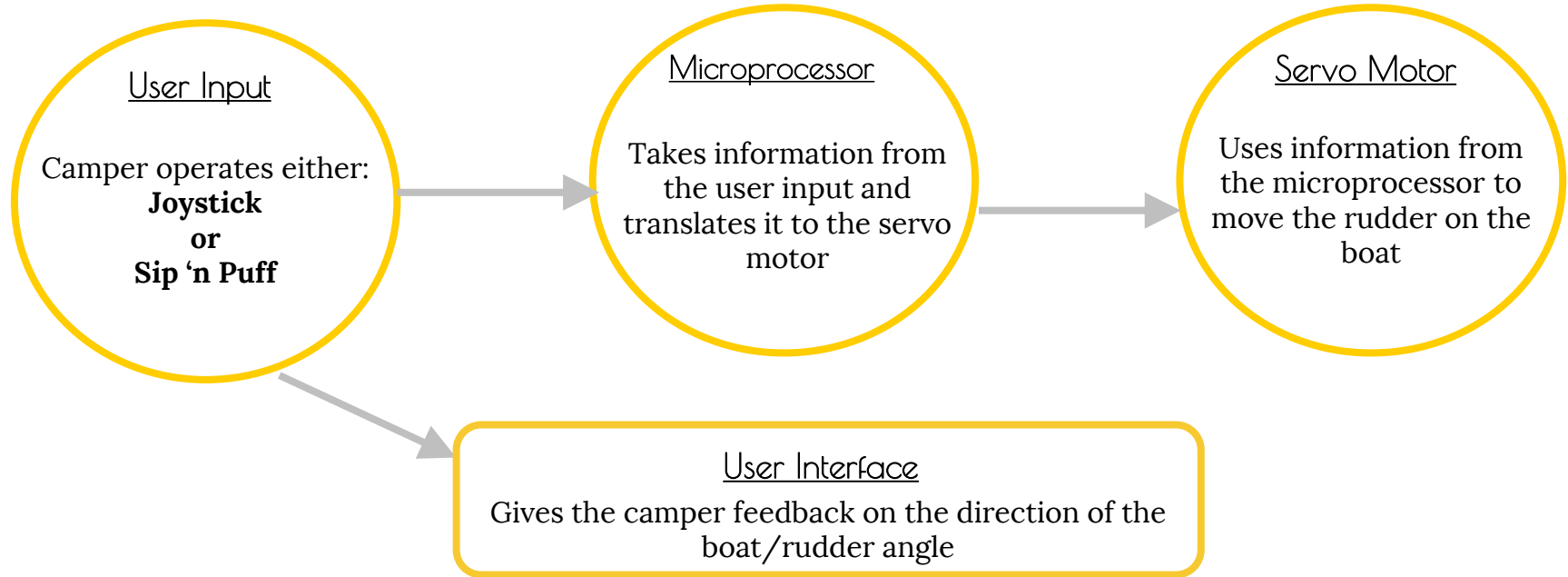


Steering Options



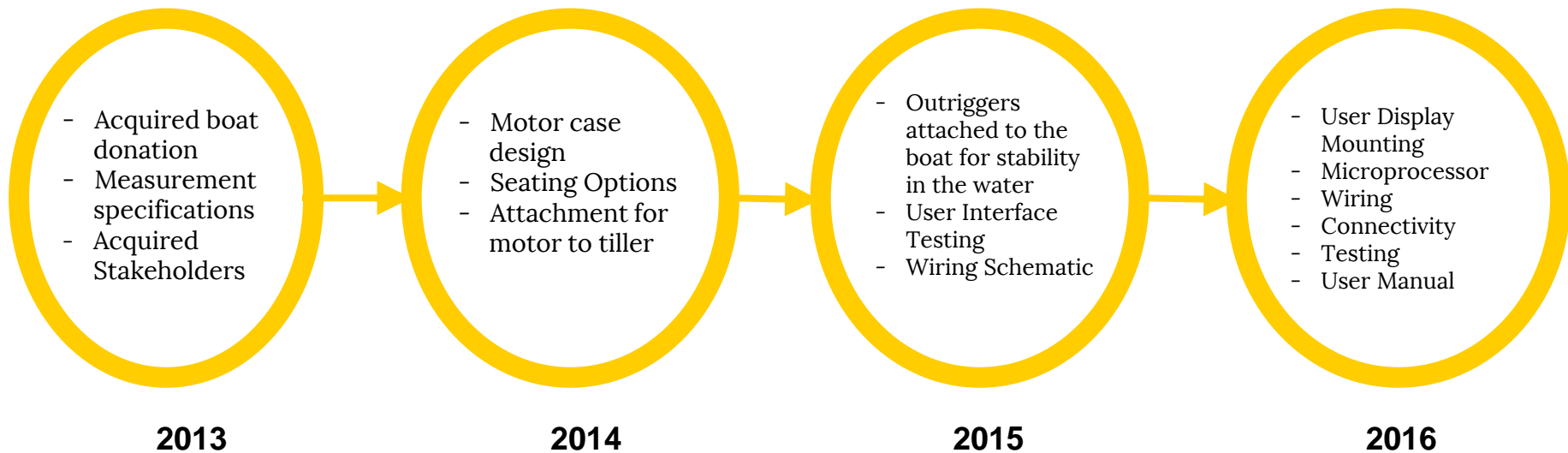
Boat Overview

*A brief diagram of
how the sailboat
operates*





Project Timeline



● Fall 2016 Semester Focus



- *Split into subteams*
 1. *Manual/Mounting*
 2. *Hardware/Wiring*

1

Manual/Mounting Subteam

Eric Slingo and Abi Lutes

- **General Sailboat Use**
- **Safety Guidelines**
- **Sip n Puff**
 - Attachment
 - Use
- **Joystick**
 - Attachment
 - Use
- **User Display**
 - Attachment
 - Use
- **Battery Care Instructions**
 - Charging
 - Attaching
- **Box**
 - Contents
 - Attachment/placement
- **Recommended Seating Chart**
- **Troubleshooting**
- **Storage of equipment/boat**



User Manual

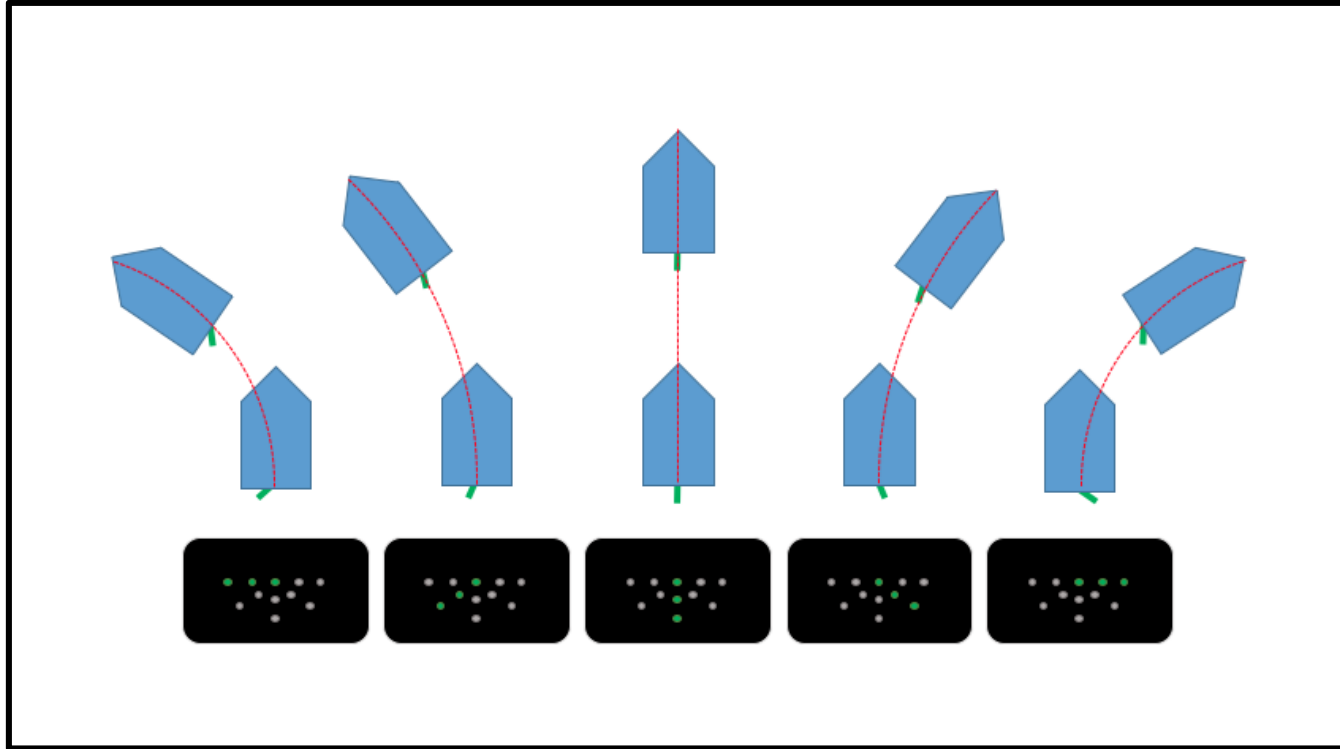
Replacement Parts



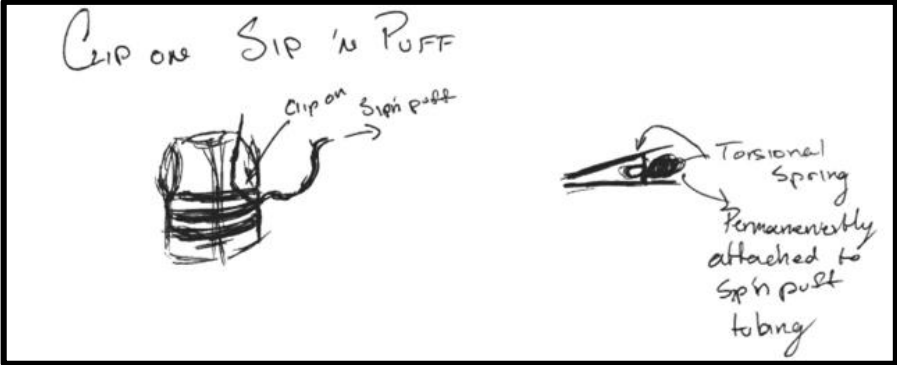
ID	Product Name	Where Purchased	Part Code	Price (When Purchased)
1	Ultra Hardware Grey 4" x 5" Shelf Brackets, Pack of 20	Amazon.com	96117	\$11.35
2	Add-A-Knob Quick-Release Pin, 1/4" Diameter, 2" Usable Length	McMaster-Carr	93460A140	\$2.87
3	Add-A-Knob Quick-Release Pin, 1/4" Diameter, 2-1/2" Usable Length	McMaster-Carr	93460A145	\$2.92
4	Receptacle for Quick-Release Pin, Oval, Fits 1/4" Pin Diameter	McMaster-Carr	94715A715	\$25.04
5	Aluminum U-Channel, 1/8" thick, 1-1/4" Base, 1" Legs, 4' LG	McMaster-Carr	9001K55	\$19.35



User Display



Sip n Puff Clip



Summary and Moving Forward

Current Semester

- ◉ Brainstormed User Display Mount and Sip n Puff Clip
- ◉ Finished Sip n Puff Clip
- ◉ Created User Manual
 - Made Replacement part table
 - Laid out sections that need to be completed

Next Semester

- ◉ Need to create User Display Mount
- ◉ Finish User Manual

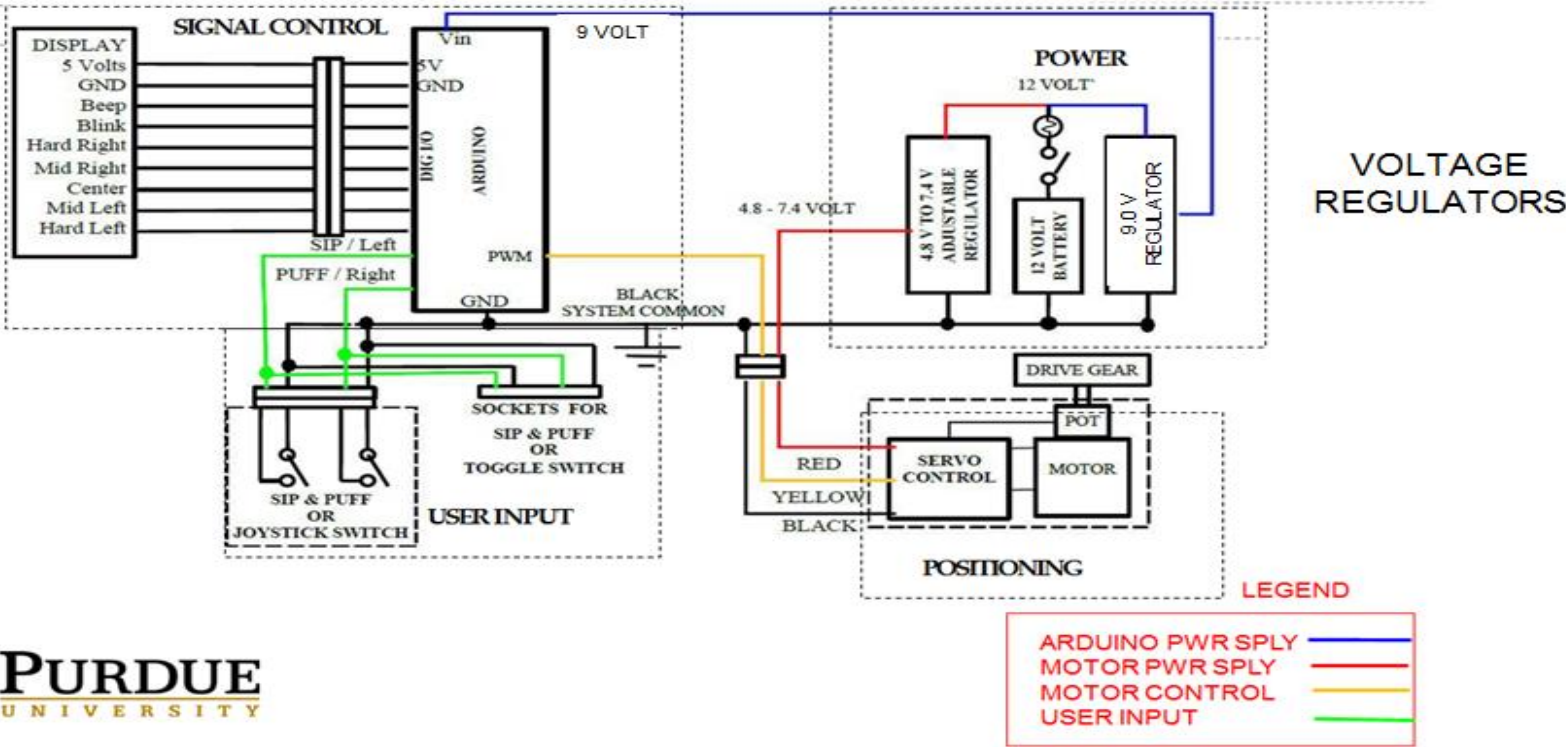


2

Hardware/Wiring

Logan Letner, Shengli Sui, and Sukrit Virmani

Schematic



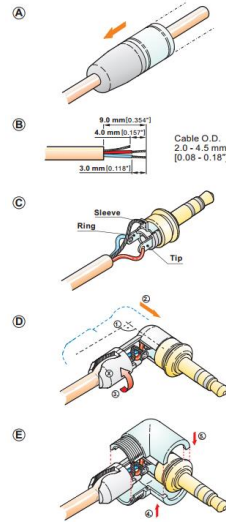
Wiring

Joy-stick

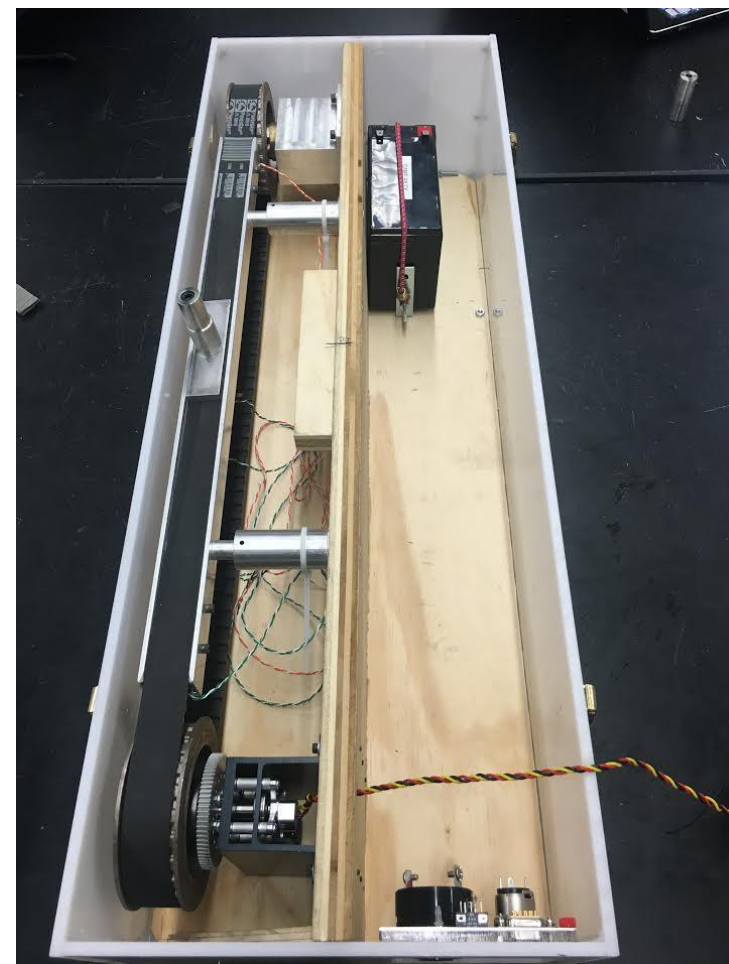
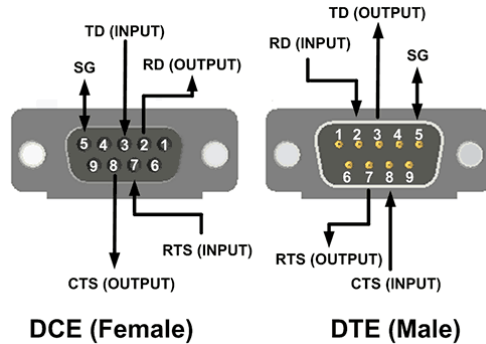
- Analog Connector
- 3 wires
- Plug on Motor Box

User Display

- 2 RS-232 Connectors
- 6 wires
- Connector on Motor Box and Display Box



- A Slide the boot onto the cable.
- B Prepare cable as shown.
- C Solder the wire ends.
- D Assembly of strain relief:
- 1 Bend cable by 90° towards the sleeve contact.
 - 2 Position the chuck on the connector body.
 - 3 Close the strain relief (break away part \otimes if cable O.D. > 3.2 mm)
- E Place the shell halves onto the connector body.
- F Slide the bushing up to the thread and tighten it.



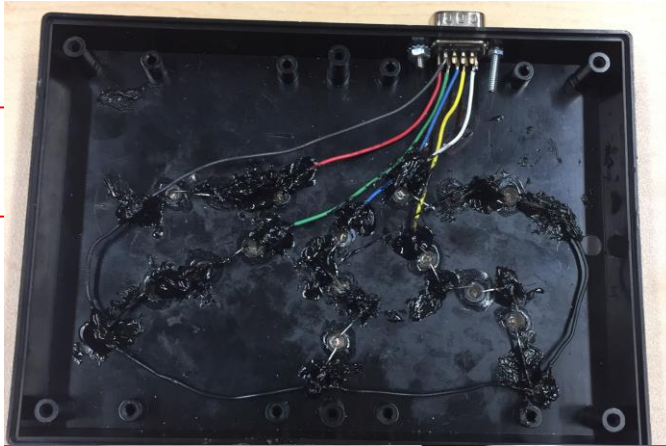
Low battery warning

Beep Alarm

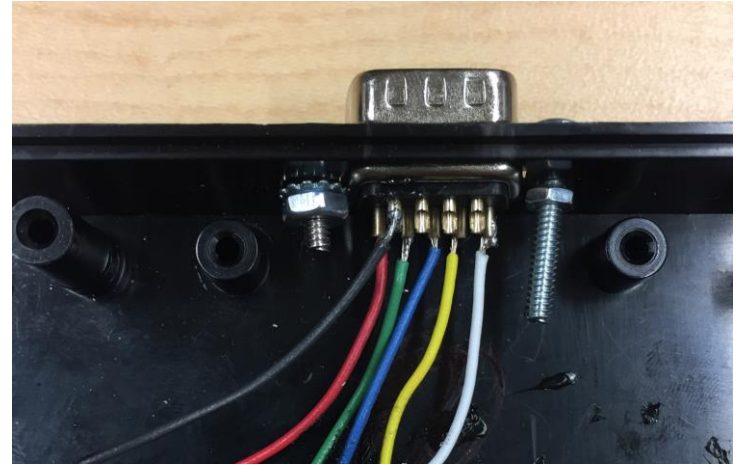
```
//low battery warning
voltage = analogRead(battery);
delay(DELAY);
if(voltage < LOWBATTERY)
{
    digitalWrite(beeper, HIGH);
    delay(DELAY);
}
```



Solder work



- ◉ Re-soldered each wire and the connector
- ◉ Fully tested to make sure it is durable.
- ◉ Water-proof design
- ◉ Finished internal and external work



ProtoBoard/Solder Board

- ⦿ The connection between the outer world and the software
- ⦿ Faced several issues due to design of the board and previous design
- ⦿ All parts have been ordered
- ⦿ Board has been cut/chopped as per the dimensions of the box



Summary

- ◉ Finished All Wiring Outside of Motor Box
 - User Display
 - Joystick
- ◉ Tested the wire connections
- ◉ Almost completed Arduino code
- ◉ Reviewed and redesigned the Proto Board layout
- ◉ Yet to finish laying out the board
- ◉ Assemble all the components and do the real-world testing



4

Moving Forward

What's Next?

Project
Delivery
Goal:
April 2017

Objective:	Status:
Sip N Puff Clip	Complete
User Display	Complete
User Display Mount	Design needs to be finalized
User Manual	In Progress
Arduino code	Complete
Test whole control system	Next Semester
Finish Connectors (PCB/Wiring)	In Progress
Finish Schematic	Complete
User testing	Next Semester



Next Semester Checklist

- ◉ User Manual
- ◉ User Display Mount
- ◉ Finish PCB/Protoboard
- ◉ Testing entire control system
- ◉ Test with users
- ◉ Deliver!





Thanks!

Any questions ?

Webmaster work

Sailboat Project

Project Description

This team is dedicated to creating a mechanism that allows the sailboats at Camp Riley to be accessible to all. They have considered many factors, especially the safety and the comfort of the riders. They are designing many aspects of the sailboat including the motor, the steering mechanism, and they attached outriggers to the boat to prevent it from tipping. They bought a beanbag chair for sailors to sit in, and they sent motor casing 3D models to Meyer for fabrication. They are currently working on drawing up circuit schematic and flow charts for the motor. They are also working on audio feedback, and the rudder position display options.

Start Date: Fall 2013

Delivery Date: April 2017

Current Progress

We are making improvement of the hardware(user display, Joystick...) and the connection between each component. We resoldered the wire connection to make it more reliable and water-proof. In addition, to help the user control the boat, we are editing a user manual in detail.



New design for the Joystick connection

- ◉ Updated the project progress page with descriptions and images
- ◉ The project home page will be completed by the end of Friday.

