RoboSail Course, Community Boating, Inc, Boston, Summer 2015

Goals of the course – you will be able to:

1. Program a robotic sailboat to do sailing tasks ranging from simple maneuvers to sailing a course autonomously
2. Code in C in the Arduino development environment,
3. Use a variety of electronic sensors and interface them with the computer
4. Create algorithms that translate sailing knowledge into code for a robot

Course outline

Class 1	Sail the boats RC and think how you can do it in code. Characterize boats. Think what information you need to be able to teach a robot boat to sail. Do robot sailing exercises. Get personal computers ready to program Arduinos.
Class 2	Learn to code Arduinos by experimenting with servo motors. Investigate data from RC Receiver and sensors. Test Rudder and Sail servos using Arduino test code. Put Arduino and electronics in the RC system to test and investigate complete system. Generate algorithms for simple sailing maneuvers.
Class 3	Define frame of reference for sensor data. Create Auto-Sail code where sailwinch is controlled automatically based on data front the Windvane. Develop algorithms for other sailing maneuvers.
Class 4	Develop algorithms/code for a variety of sailing maneuvers with cues from the RC transmitter.
Class 5	Implement Autonomous sailing with manual cues. Add code to read GPS and/or compass and use this data in new code (optional). Review the Regatta challenges and plan your strategy for getting your rating.
Class 6	Do the RoboSail Regatta and get your ratings.

