Rose Cairo - Abstract

A main project of the MIT Sea Grant lab is their Sea Perch program, which consists of DIY robots made so that middle and high school students can create them using common materials that are relatively inexpensive. The robots are used to help the student understand the basics of how some aspects of engineering work. Since this project was initially created in the 1990s, there has been a push to bring the Sea Perches into the 21st century. This was done by adding new “modules” that make the robot more intricate and give it the ability to do more tasks, for example adding whiskers based on seals to alarm when the robot hits something, or grippers made of silicone to grab items in the water. Since the Sea Perch is an educational tool, the leaders continuously reach out to different teachers and ask what they want to see next. A big common addition many educators wanted was water quality sensors, so the students could learn about water quality and how it is changing with climate change. Meeting with CBI (Cambridge Boating Institute), led to the discovery of people who were testing the Charles daily for months of the year, and beyond that, discovered they wanted to test more, as the water quality is prominent and important to sailors. Wiring, testing, and creating a tethered robot with motors and sensors that tested turbidity, depth, and temperature, were the important parts of the plan to use this machine to test the Charles river and get more information on how it changes day to day. This information not only is good in general to see the changes in the river, but could also help give necessary information on when it is safe to go out on the water.