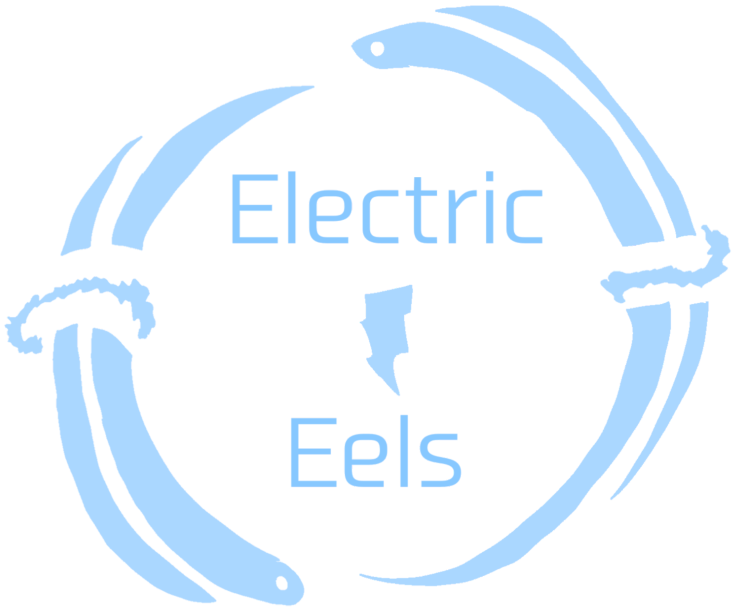
NURC 2024



Who We Are

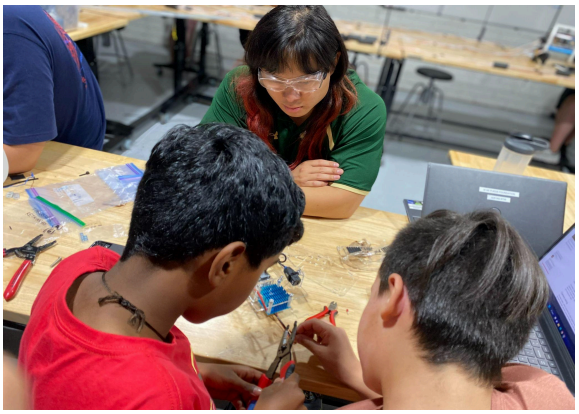
We are Electric Eels and we are based in Chandler, Arizona. This is currently our second year doing NURC. We are composed of two FTC teams, BinaryBots and Da Geese of Freedom, that merged to become a NURC team. We merged these two teams because the majority of the team members had an interest in NURC. Our team consists of sixteen team members who help to represent over six Chandler-area schools.

Strategy

First, we like to make sure we understand the game. To do this, we read the rules to determine which missions would be more feasible considering limits such as buoyancy, being able to see with the camera, and timing. Then, we chose our mechanisms based on the requirements of each challenge. One of the mechanisms is a thermometer for the volcanic vent challenge. Our mission is to measure the temperature and quickly swim back up to the surface attempting to end the mission early for more points.

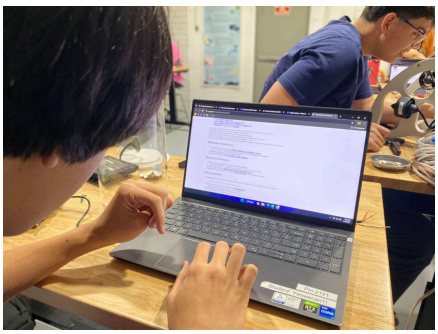
Mechanical

Our mechanical team began to build the frame of the robot a few weeks into the season. As they continued to build and finally finished the frame, they ran into some issues with the thrusters. The thrusters were not aligned correctly.



Our mechanical team realigned the thrusters so that the mass was centered properly when we put the robot into the water. As for the noggin, it was a bit difficult as our team members ran into issues such as wiring management. They soon realized that they needed to strip the wire to solve their occurring issue. After this was done they were able to continue working on the process of the noggin.

Programming



Our programming team has currently been working on the code for the LCD. Throughout writing the code there were minor errors such as misplacing and spelling errors. After these mistakes were fixed, our programming members continued to work on other items such as the teensy. The main goal was to write code for the teensy so that it could function properly and be able to give commands from the controller and pass it on to the robot.

Electrical

For the electrical components of the robot, we started on the braiding of the wires for the connection. Two of our team members helped braid the tether, ethernet cable, and the data cable all together so this could help establish our driver station. On one end of the tether, we had to leave space so that the wires now began to attach to the robot. Our team had to be very careful with how much wire was stripped so that the connection kept working. If the wiring was to be cut too short, our robot would circuit. The wiring is very essential to the robot which is why we had to be very cautious with how much we were cutting off and how we were wiring. After finally stripping all the wires our electrical members were making sure to tightly seal up the wires so they were waterproof.

Testing

For testing many variations of testing were put to the test. Such as testing the buoyancy, seeing if it is leakproof, and also being able to drive straight and having no major issues on the robot while being underwater. More items to be tested are the robot is not short-circuiting, floating right, driving, and being able to just have everything work properly.

Website

We began to create our website using HTML. We started with programming the navigation header. After programming the navigation header we programmed the rest of the pages. After this, we went through our code checking for errors.

Technical Writing

For our technical writing, we focused on the 3 main aspects such as; journal, presentation, and poster. For the presentation, we decided on a slideshow dedicated to all of our technical and nontechnical aspects. This includes visuals, labels, etc. As for the poster we referenced Degrees of Freedoms' trifold as a reference for our poster creation. We looked at their poster and took inspiration, such as the trifold setup, pictures, and labels. After revising the rules for the making of this poster we began to begin the creation of our poster board.

Acknowledgments

We would like to thank the mentors at SSPF who gave continuous support throughout our NURC season with nontechnical and technical support. We would also like to acknowledge Desert Wave for all their support on the frame of our robot. A special thank you to Mr. Steve Forbes for helping build all the kits and cutting out all the parts, and to Brandon for writing the rules and making them useful guidelines. Everyone who helped us on this journey is very much appreciated because it helped us with many technical and nontechnical aspects. Thank you so much to everyone who helped us!