



Ounce of Prevention Worth a Pound of Cure

S.L.U.R.P (Sea Life Underwater Relocation and Protection)

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Abstract

- We transformed the V-wing design into an A-wing design to improve balance and maneuverability. By adjusting motor directions and modifying floats, we improved buoyancy and control. Through teamwork and testing, we developed a successful design that led us to the international competition.
- S.L.U.R.P. selected this project because we were interested in engineering teamwork. The SeaPerch challenge gave us the opportunity to design and build an ROV, which combined hands-on building with creative thinking.
- Our team's hypothesis was that our craft would perform similarly to last year while improving the prong and adding a balance system to help lift heavier objects. We thought that these changes would provide us more of an advantage.



Background & Motivation

- We picked this project because we wanted to become more involved with our school community and build stronger relations before most of us graduate. We also aimed to challenge ourselves academically, seize the opportunities presented to us, and learn new things. It is important because it shows how our project connects to real-world applications and helps us understand how engineers use and improve underwater technology.

Methodology

- Our team focused on researching, creating, and producing methods to develop a plan for how we can make a difference by stopping the problem of marine debris before it gets bigger.
- While developing our ROV, our approach evolved through consistent testing, observation, and adjustment. Initially, we focused on modifying the frame to look like the A-wing. However, once we tested in the water, we realized small details had impacts on our performance, and we worked to address those. We approached our project with a broad stance as we were planning on tackling it head on and finding the problem. However once we did more research we narrowed our stance and thought how it evolved, because we saw it was important to attack the influx first and do our best to stop it before it even come close
- We built the craft using PVC pipe for the structure, pool floats for buoyancy, and tubing to connect the balloon pump. Motors allowed underwater navigation, and tape helped secure and label parts. We also used small hoops in practice to simulate the mission.

Next Steps

- The Navy implements ideas for their mission much like we did. Even though the Navy may have bigger missions and a larger budget, I believe they take the same approach we did: we look at the mission we need to accomplish and create a craft to combat it. Engineers test no matter what the outcome and aim to improve the project as much as possible. A question that stems from this discussion is how different materials and designs affect the ROV's performance and durability underwater.

Results & Discussion

- As a team, we were all surprised by our ability to work together and finish first in pool time and first overall. Winning first overall and first in pool time showed us that with teamwork and determination we can achieve a lot.
- Our team learned that testing and communication are key. We also learned that team bonding and trust make a big difference.

Item	Vendor	Use	Price
Screw	Lowe's	To interact with things in the water	\$0.23
Nerf Dart	Amazon	Padding on the controller bumpers for comfort	\$0.54
Balloon	Dollar Store	To help the craft rise when lifting heavy objects	\$0.25
Bicycle Pump	Amazon	To pump up and deflate the balloon when ascending and descending the craft	\$9.99
Tubing	Amazon	An extension to the pump to reach the craft if it gets to far	\$7.58

Acknowledgements

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Conclusion

- Our pure objective was to be able locate the influx of which harmful things threatening marine life enter those habitats and create barriers and systems to prevent and to protect it.