Ghost Net Removal Using ROV Technology

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ABSTRACT

Team Nomadic Guardians developed a high-efficiency ROV for the 2026 International SeaPerch Challenge. By strictly applying the Engineering Design Process (EDP), we engineered a solution that maximizes maneuverability and speed without increasing costs. Key innovations include a servo-driven claw, a dynamic balloon buoyancy system for lifting heavy debris (187g), and a 3D-printed streamlined chassis.

METODOLOGY

We designed a lightweight SeaPerch ROV with a gripping mechanism to grab ghost nets. The structure was optimized to improve movement and stability. The ROV was tested in water to evaluate its performance.

RESULTS & DISCUSSION

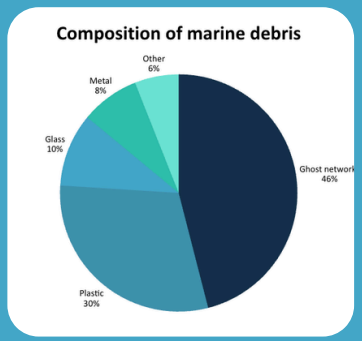
The ROV can successfully navigate underwater and collect small net fragments.
Testing showed improved speed and maneuverability after design optimization.

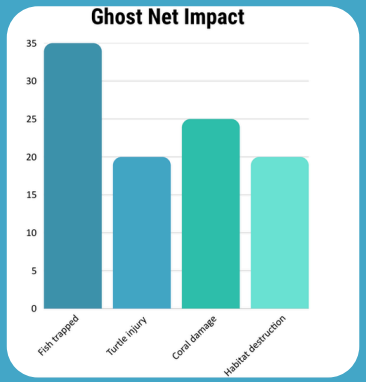
CONCLUSION

Our project demonstrates that small, cost-effective ROVs can help address real environmental problems. This solution has potential to support ocean cleanup and protect marine ecosystems.

BACKGROUND&MOTIVATION

Each year, large amounts of fishing nets are lost in the ocean. These ghost nets continue to trap fish, turtles, and other species, causing injury and ecosystem damage.
Our team was motivated to create a practical and affordable solution using underw

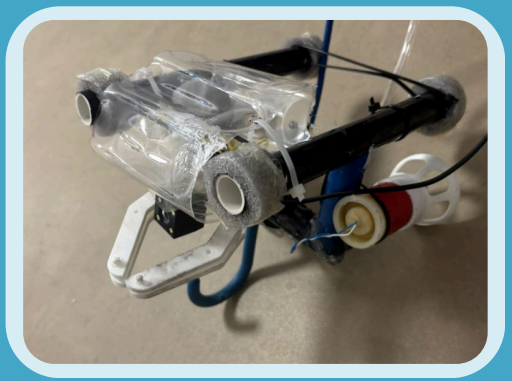




NEXT STEPS

Improve the gripping system for stronger and more stable handling. Add a camera to improve visibility. Test the system in real conditions. Explore automation for autonomous operation.

OUR ROV:



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