

SCGSSM Here Comes the Boom Presents -- Fishing for Ocean Cleanup



Inquiry

How can we reduce sunken ocean debris caused by human pollution to restore ocean ecosystems?
How can we ensure we protect wildlife while restoring the natural ecosystem?

Process

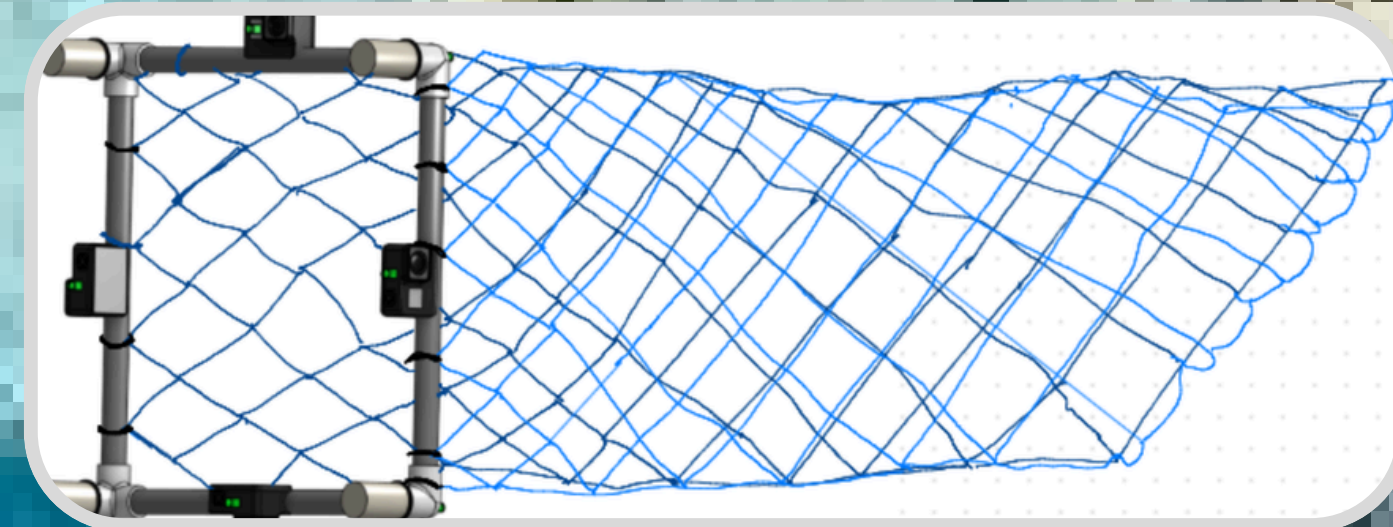
Many ocean clean up projects like The Ocean Cleanup focus on the surface, targeting debris within the top 5m. Half of all pollutant debris sink to the bottom of the ocean. We strive to aid current clean up efforts by engineering a solution to these debris that impact deeper ocean ecosystems. Using deep sea ROVs we can better identify, record, and document the impact of deep ocean pollution. Using ROVs we can also build retrieval devices to dive down and retrieve deep ocean debris. Using AI we are able to identify pollution and marine life through a camera that will prevent harming wildlife while optimizing its efficiency.

Using Roboflow to train a unique model we can train it using thousands of handpicked images. We fed it images of trash floating in the water, on the surface, and sunken to the seabed. We also fed it thousands of images of marine life. With Roboflow's flexible hosting abilities we can host the model on local computers using container application like Docker. We can feed the AI saved images or live feed from a webcam and it will identify the type of marine life or trash and output the images in realtime. With this powerful AI image recognition tool we can build an ROV that can recognize real time image data from mounted cameras and navigate itself to retrieve the trash using nets similar to fishing nets, but instead of catching fish, we're fishing for trash. Following designs like The Ocean Cleanup we can use lights and audio to deter life and if those systems fail, the AI recognition automatically detects close by marine life and navigates away or stops operation.

Abstract

With average 10 Million Tons of pollution entering the ocean annually, nearly half of it will sink to the ocean floor affecting ocean ecosystems. Our mission is to develop an ROV recovery system that can search and retrieve these deep ocean debris to help out marine life and protect the ecosystem. Using systems like real time AI image recognition we can identify and log ocean debris. Using the same steady fast method that plague the oceans, we can use a net to capture debris for proper waste management.

Explore more technical details in designing our AI and robot mechanisms and download the AI for yourself --
<https://sites.google.com/view/seaperchscgssm/2026-real-world-innovation-project>
or use - <https://tinyurl.com/4dac7umr>



Basic robot design using pvc frame, 4 propellers and cameras, and a simple fishnet to catch deep ocean debris

Input Images



Output Images



Next Steps

The next step is education. So much damage to our oceans is done by mismanagement and misinformation. One of the most important jobs when finding a solution is educating the public about the current state and how their actions now impact the ocean ecosystems' now and in future. By educating the general public you can help stop the problem at the source. Most pollution comes from middle economic countries where proper management is low, yet consumerism is high. By educating the biggest producers of waste on pollution and how they may be participating in mismanagement of waste, we can reduce the amount that of waste that ends up in the ocean. As education and awareness increases so does support, and with more support we can greatly boost cleanup initiatives. With that comes the next step of petitioning. In the past couple of years support from global leaders has greatly increased, but we still have a ways to go. Next steps include petitioning not only global leaders for global initiatives, but also local leaders within your community. Then comes fixing what has already been damaged. With increased support we can drastically increase cleanup programs restoring our oceans to their natural glory.