GO-BGC FLOAT “GEOFF”

WARRIORTIDES

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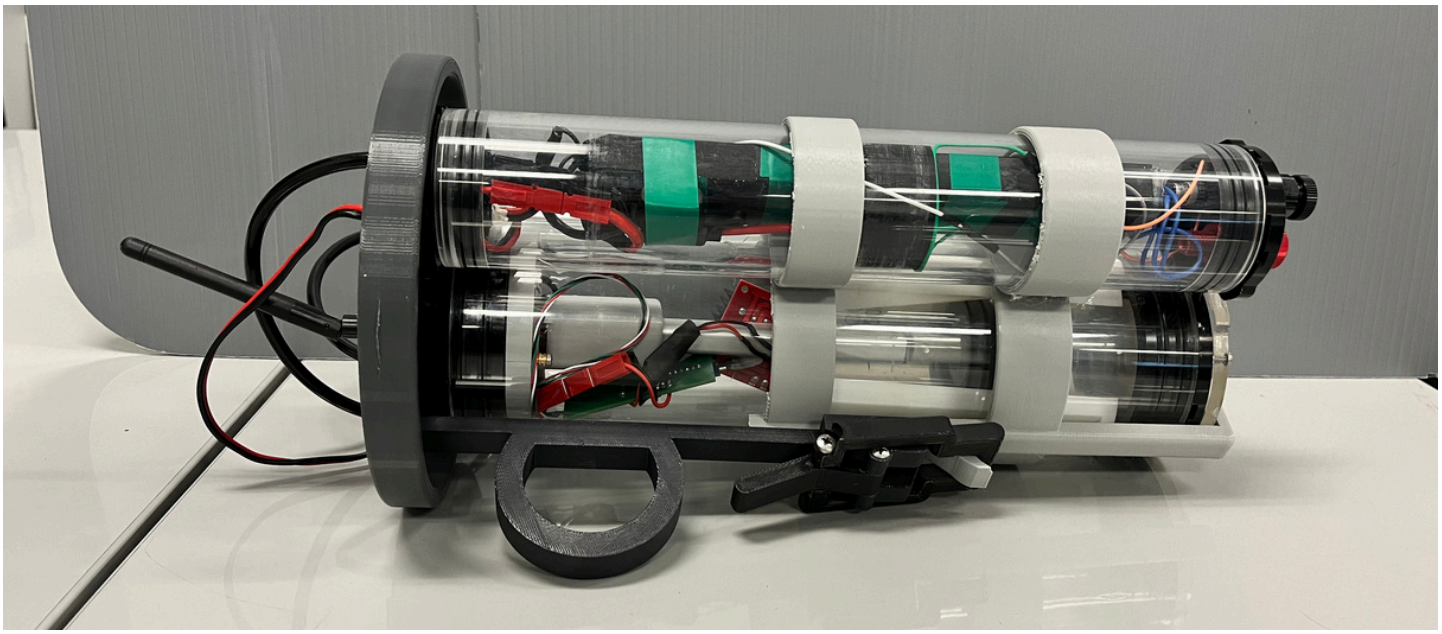

Operation

Geoff centers around a buoyancy engine that uses a large syringe to simultaneously draw in water and compress the air within the enclosure, rendering the float negative buoyant. This causes the float to sink for the first half of the profile. To complete the profile, the water is pumped out of the syringe, restoring the float to positive buoyancy. To create a secure hold for the ROV to grab there is a halo-shaped top. The main enclosure is also clamped shut, preventing the force of the linear actuator from separating endcaps and creating leaks.

Geoff is controlled by an ESP-8266-based Wemos D1 Mini Pro microcontroller and has a BarO2 depth sensor, an external antenna for communication, a voltage converter, and an H-bridge that enables control of the direction of the actuator onboard. All of these electronics are connected to a custom PCB, which simplifies servicing and reduces the risk of shorts or wires getting caught on moving parts. *Geoff* is powered by eight AA alkaline batteries in an external battery enclosure.

Safety

- 7.5A fuse placed less than five cm from the positive terminal of the AA batteries, all of which are secured to the enclosure
- The syringe has been depth tested at maximum pressure to ensure that it does not burst when profiling
- The float enclosure has been leak-tested in thirty-minute increments
- All batteries are secured in a separate enclosure with an endcap that can be forced out to handle excess pressure
- A tube connects both enclosures, allowing pressure from the main enclosure to escape to the battery enclosure when the main enclosure is clamped shut.