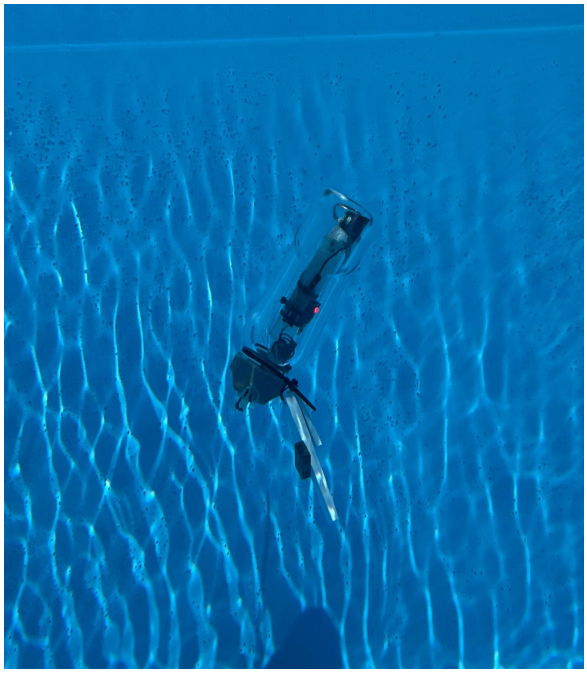

Non-ROV Device- Buoyancy Engine

The buoyancy engine is composed of a Arduino Pro Mini Microcontroller and a circuit board, enclosed within a recycled water bottle. This bottle has been sealed with epoxy so as to not risk wetting the electronics. The Arduino Pro Mini is programmed to allow the Non-ROV's processes to be fully autonomous. It is powered by a standard 9v Alkaline battery, which is secured inside, close to the lid of the bottle. There is a 100ml Syringe which acts as a water pump, and allows the Engine to take in and expel water. A 3D-printed cylinder is constrained within this syringe which serves as a holder for the ballast, weighing down the engine. This weight is not enough for certain densities of water, and can be modified to accommodate a variety of environments. There is a lead screw attached to the cylinder, which is connected to a servo. This will provide the rotational motion to push and pull the plunger. Because this is all contained within a plastic water bottle, there is bound to be some air compressed inside, but this value is negligible and poses no threat to the device. The Arduino has an attached LED indicating the current status of the device (whether it is drawing in water, expelling it, or static). There is even a potentiometer on the circuit board to control how long the Buoyancy engine performs each action. This vertical profiling device will sink to the bottom of the water, and resurface without the aid of a team member (autonomously).