

Written + Photographic Description of Non-ROV Device

In Task 3.1 *MATE Floats!*, our company was asked to design and construct an operational vertical profiling float. This underwater float is a non-tethered, autonomous robot that has no propeller and uses very little energy. **A 9 volt lithium rechargeable battery is used to power the system.**

The syringe is controlled via stepper motor, which is controlled by an Arduino Pro Mini. When on command (by a IR remote), the Arduino sends a command the stepper motor, expanding the syringe, which in turn sucks water in. The syringe expands when the stepper motor spins a screw, expanding the screw. Finally, the stepper motor spins in reverse, closing the syringe.

The vertical profiling float moves by changing its buoyancy, often by taking in or expelling water. This change in buoyancy causes the float to rise and sink in the water. The float has a buoyancy engine, pitch control, and a rudder. In terms of safety requirements, our vertical profiling float strictly follows the safety requirements outlined by the JSOs. These ensure that all electrical components are kept far from water (i.e. in a water-tight enclosure).

Image of Non-ROV Device

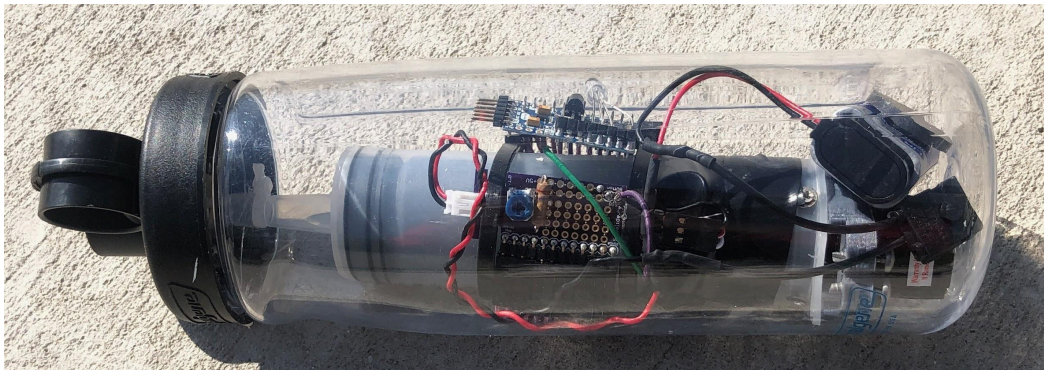
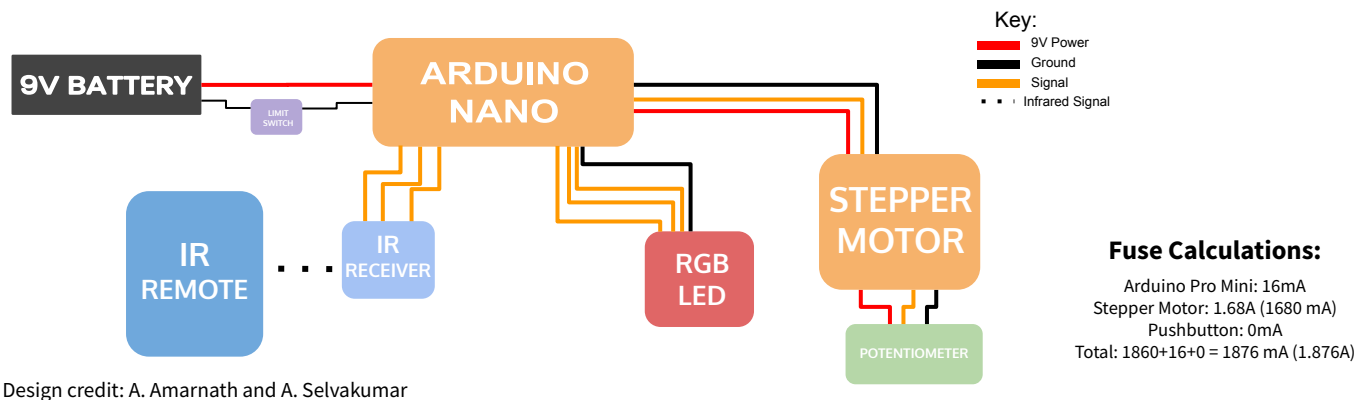


Photo credit: A. Amarnath

Non-ROV Device SID



Design credit: A. Amarnath and A. Selvakumar