EXECUTIVE SUMMARY

Pollutants are an enduring issue in most freshwater and aquatic ecosystems. The occurrence of these pollutants is difficult to mitigate due to the abundance of disposable, non-biodegradable products that humans use daily. Many of these pollutants reside underneath the water's surface and are difficult to remove from the environment. While products exist for trash collection from aquatic environments, these products tend to lack the ability for underwater retrieval. Figure 1 shows how JellyBOT addresses this issue with a propulsion system for underwater travel, an actuator system for grasping trash, a power system for recharging, a remote control and camera for user control of the robot, and a tether to maintain connection to the physical body of the robot as well as send the cameras' visuals to the user's laptop.

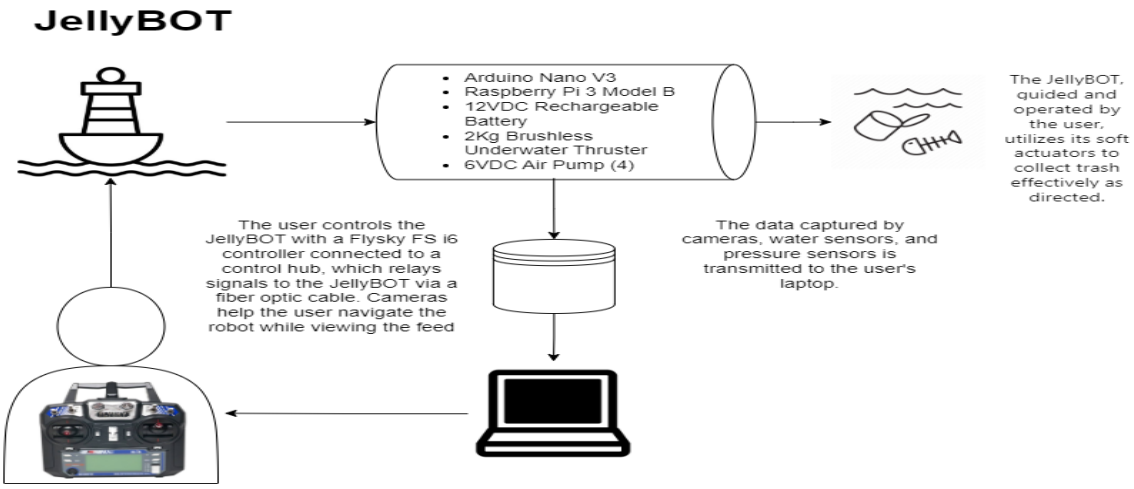

Figure 1. The JellyBOT Flow Diagram

JellyBOT is designed to be fully waterproof and fully submersible so that it is compatible with an aquatic environment. The propeller acts as the drive unit and allows the robot to navigate through its environment without sinking. The navigation and direction are operated via remote control. The JellyBOT's cameras feed directly to the laptop, enabling the user to observe the surrounding environment, and use the remote control to activate the actuators to grasp pollutants seen on camera. The JellyBOT is rechargeable wirelessly based on the principle of electromagnetic induction.

The JellyBOT implements these requirements while adhering to its main goal of ease of use. The remote control used for the JellyBOT has many different channels, making it able to control multiple mechanisms of the robot such as the propeller, the actuators, and navigation. Wireless recharging through magnetism allows easy and convenient powering of the robot. The propeller chosen is designed for underwater use and has higher thrust than its competitors.

The JellyBOT revolutionizes pollution control by offering an easy-to-use product that allows the user to collect trash from below the water's surface in hard-to-reach areas. The camera feed and remote control allow users to view the environment in new ways and offer a solution to trash buildup without hard labor or extensive human intervention. While the JellyBOT is designed for freshwater use, its design may be elevated to be compatible with all types of aquatic environments in the future.