

Abstract

Aquatic environments currently pose a challenge to the human race. Physical limits restrict human mobility underwater, leaving the field vastly unexplored with considerable room for advancement. A submersible device capable of traversing aquatic environments would expand the human ability underwater. Based on the fundamental concept of moving underwater, the project is an underwater mobility unit designed to navigate an aquatic environment and complete a simple task: detect and land on a target. The underwater mobility unit utilizes a novel maneuvering system for sinking and machine learning algorithms for searching. The machine begins at the surface of a 120 by 56 centimeter area of water. The unit will move about the area to search for the red 10 by 10 centimeter square target in a random location at the bottom of the area. Essentially, the objective of the machine is to continue searching until the target is detected, then land and turn on an LED light to signal completion. After ten trials, the unit achieved a 70% success rate of landing on the target, with three failures caused by water disturbance. Improvements to the container and turning mechanism would make the unit more stable in water, circumventing issues of water disturbance. Future experimentation could include a larger area with varying targets to further challenge underwater movement. Features of the current machine functioned as intended and could be implemented in more extensive projects with real-world applications.