

## **Bio-Inspired Autonomous Underwater Vehicle to Detect, Track and Follow a Surface Moving Object**

Autonomous underwater vehicles (AUVs) can be used to monitor and track a surface moving object. In this case, it may be beneficial for the vehicle to stay on the sea floor until an object of interest appears. The team shall design, fabricate, and test a bio-inspired underwater vehicle capable of sitting on the seafloor, detect a surface moving object based on optical signature, measure its wake and follow this object.

### **System Level Requirements:**

1. The group shall design an underwater vehicle that can travel over a distance of approximately 10 [m] using programmed waypoints, land on the floor, continuously acquire video and pressure to record the motion of a surface moving object and its wake, then surface following a predefined time, and end mission.
2. Requirement 1 + detect the presence of the surface object, and surface once the object is outside of the field-of-view, or after some pre-defined time if the object is not detected.
3. Requirement 2 + infer the course of the moving object, surface once the object is outside of the field-of-view and move in the same direction as the surface object.

### **Operating Requirements**

- The vehicle should be carried by two persons.
- The vehicle must have the capability to operate for at least 2 [hrs].
- The vehicle must be small enough to operate in the outside pool of the Engineering West Building in the Boca Campus.



Figure 3. Bio-Inspired Autonomous Underwater Vehicle to Detect, Track and Follow a Surface Moving Object.