

## EXPERIMENT 14: OBSTACLE DETECTION USING IR SENSOR

**Objective:** The objective of this experiment is to implement obstacle detection using an IR sensor on a Chelonia Bot. The Chelonia Bot is equipped with an IR sensor that detects obstacles in its path. When an obstacle is detected, the robot stops, and when no obstacle is present, it continues moving forward.

### Hardware Setup:

- Connect the motors to the Chelonia Bot following the instructions provided in Section 2.1.
- Connect the Chelonia Bot to the Arduino IDE as explained in Section 2.3.
- Connect the IR sensor: Refer the connection from the link: [Arduino IR connection](#)
  - Connect the IR sensor pin to analog pin A0.
- Connect the motors to the Chelonia:
  - Connect motorAPin1 to pin 8.
  - Connect motorAPin2 to pin 9.
  - Connect motorBPin1 to pin 10.
  - Connect motorBPin2 to pin 11.

**Code Example :** [Obstacle detection using IR sensor](#)

### Usage Instructions:

- Power on the Chelonia Bot.
- Observe the serial monitor in the Arduino IDE or a terminal to see real-time updates.
- The IR sensor continuously reads values.
- If the IR sensor value falls below the threshold (adjust IR\_THRESHOLD as needed), the robot considers an obstacle detected.
- The Chelonia Bot stops moving when an obstacle is detected.
- When no obstacle is detected, the Chelonia Bot moves forward.

### Expected Results:

- The Chelonia Bot should stop when an obstacle is detected by the IR sensor.
- The Chelonia Bot should move forward when no obstacle is present.

### Frequently Asked Questions (FAQs):

- **What does the IR sensor measure in this experiment?**
  - The IR sensor measures the infrared reflection from nearby objects. When an object is detected, the reflected IR light changes, indicating the presence of an obstacle.
- **How do I adjust the sensitivity of the IR sensor?**
  - The sensitivity is controlled by the threshold value (IR\_THRESHOLD) in the code. Experiment with different threshold values to find the optimal setting based on your environment.