EXPERIMENT 10: OBSTACLE ALERT ROBOT

Objective: The objective of this experiment is to create an Obstacle Alert Robot using a Chelonia Bot. The Chelonia Bot is equipped with ultrasonic sensors to detect obstacles, and a buzzer is activated when an obstacle is detected within a certain range. The robot stops moving forward to avoid collisions when obstacles are close.

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.
- **Motor A (Left Motor):**
- Pin 8 (motorAPin1): Connect to the first motor's input 1 (IN1).
- Pin 9 (motorAPin2): Connect to the first motor's input 2 (IN2).
- **Motor B (Right Motor):**
- Pin 10 (motorBPin1): Connect to the second motor's input 1 (IN3).
- Pin 11 (motorBPin2): Connect to the second motor's input 2 (IN4).
- Connect the ultrasonic sensor to the Chelonia Bot: Refer the link for the connection ":Ultrasonic sensor with Arduino
    - Trig Pin: Connect to pin 4 on the Arduino.
    - Echo Pin: Connect to pin 5 on the Arduino.
- Connect the buzzer to the Chelonia:
    - Buzzer Pin: Connect to pin 2 on the Arduino. Please refer the link for the connection Buzzer arduino connection
- Example Code: Obstacle alert robot

Expected Results:

- The Chelonia Bot should navigate the environment, stopping and alerting when obstacles are detected within a range of 20 units.
- The buzzer will produce a beeping sound when obstacles are detected.

Additional Information:

- Adjust the distance threshold in the code to modify the obstacle detection range.
- This experiment demonstrates a basic obstacle avoidance mechanism using ultrasonic sensors.

FAQs: Q: Can I modify the distance threshold for obstacle detection?

A: Yes, you can adjust the distance threshold in the code to customize the obstacle detection range. Look for the condition **if (distance < 20)** and change the value "20" to your desired distance.

Q: How can I change the buzzer sound duration?

A: You can modify the delay values associated with buzzer activation and deactivation in the code. Adjust the values inside the **delay ()** functions to change the duration of the beep.