

## EXPERIMENT 31: AIR QUALITY MONITORING ROBO

**Objective:** The objective of this experiment is to create an air quality monitoring robot capable of detecting air pollution levels using a sensor. Upon detecting poor air quality, the robot alerts the user and stops its movement.

### Setup:

- Assemble the robot hardware according to the instructions in Section 2.1.
- Connect the robot to the Arduino IDE as explained in Section 2.3.

### Hardware Connection:

- Connect the Chelonia robot base to the Arduino or compatible microcontroller board.
- Connect the air quality sensor to analog pin A0 on the microcontroller board.
- Connect the motor control pins as follows:
  - IN1 to pin 8 (Input 1 of Motor A)
  - IN2 to pin 9 (Input 2 of Motor A)
  - IN3 to pin 10 (Input 1 of Motor B)
  - IN4 to pin 11 (Input 2 of Motor B)

Code Example: [Air Quality Robo](#)

### Usage Instructions:

#### Power On:

- Connect the Arduino or microcontroller board to a power source.

#### Operation:

- The robot continuously monitors the air quality sensor readings.
- If the air quality surpasses a predefined threshold (value > 181), indicating poor air quality:
  - The robot stops its movement.
  - "Air quality not good" is printed on the serial monitor.
    - If the air quality is within acceptable levels:
  - The robot moves forward.
  - "Air quality good" is printed on the serial monitor.

#### Indication:

- The serial monitor displays the analog readings from the air quality sensor.

- "Value: [analog reading]" indicates the current air quality reading.

4. **Can the robot be customized or expanded with additional features?**

- Yes, the robot's functionality can be extended by adding more sensors or integrating with other devices. Users can modify the code to implement custom actions based on specific air quality thresholds.

5. **How accurate are the air quality measurements taken by the robot?**

- The accuracy of the air quality measurements depends on the sensor used and calibration techniques. Users are encouraged to calibrate the sensor regularly for optimal performance.

6. **Is the robot suitable for outdoor use?**

- The Air Quality Monitor Robot is primarily designed for indoor use, but it can be adapted for outdoor applications with proper protection from environmental elements.

7. **Can the robot be controlled remotely?**

- Currently, the robot operates autonomously based on air quality readings. However, users can integrate remote control capabilities using additional hardware or software modifications.

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