



# ADHIYAMAAN COLLEGE OF ENGINEERING[AUTONOMOUS], HOSUR-635130

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

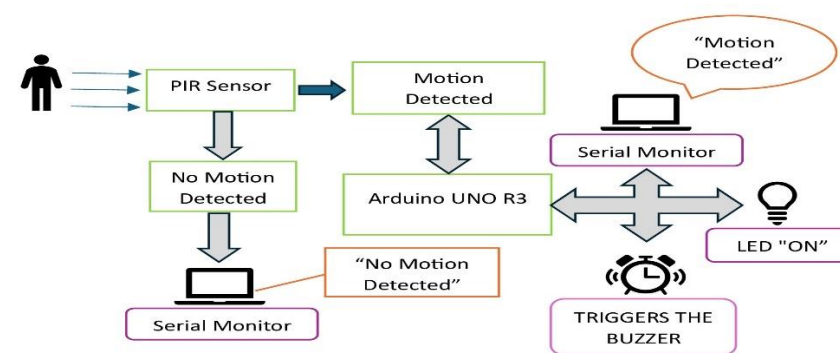
### SECURITY SYSTEM USING PIR SENSOR



#### OBJECTIVES

- To design and implement a motion-detection security system using a Passive Infrared (PIR)
- To develop an alert mechanism that activates an LED and buzzer upon detecting motion, providing real-time visual and auditory alerts to nearby individuals.
- To integrate a serial monitor for digital notifications, enabling the system to send an alert message
- To create a cost-effective and scalable security solution that can be easily deployed in small-scale settings such as homes, offices, and other areas that require basic intrusion detection.

#### BLOCK DIAGRAM

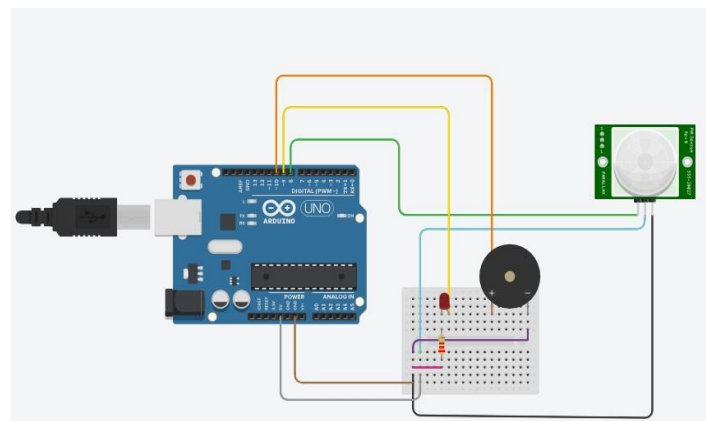


#### WORKING PRINCIPLE

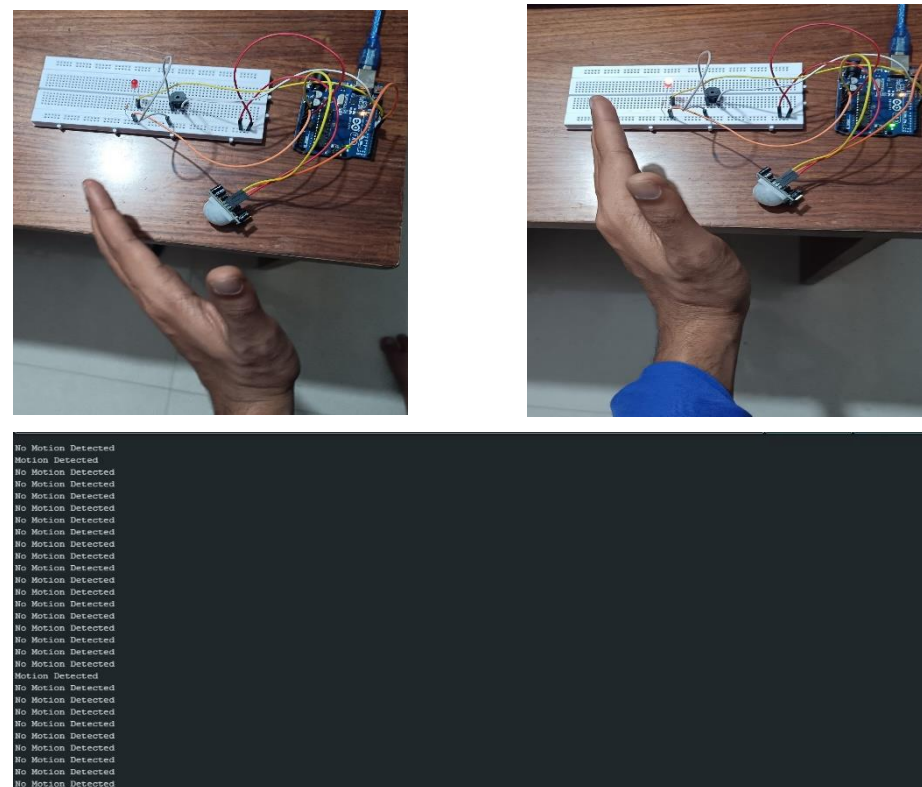
1. The PIR sensor detects motion by sensing changes in infrared radiation in its surroundings.
2. Upon detecting motion, the sensor sends a high signal to the Arduino microcontroller.
3. The Arduino processes the signal and activates an LED and piezo buzzer to indicate the detection.
4. A notification is sent to the serial monitor, providing real-time updates on motion detection.
5. The system continuously loops, ensuring ongoing monitoring and immediate response to motion.

#### EXPERIMENTAL SETUP

- Connect the PIR motion sensor's VCC to the Arduino's 5-volt pin. Link the Arduino's GND pin to the PIR sensors.
- Connect the PIR sensor's OUT pin to Arduino's digital-8 pin.
- Connect the LED's positive leg to the Arduino's digital-9 pin and its negative leg to the Arduino's ground via a 220-ohm resistor.
- Connect Piezo's positive leg to the Arduino's digital-10 pin and its negative leg to the Arduino's ground.



#### EXPERIMENTAL RESULTS



#### CONCLUSION

The PIR sensor-based security system effectively demonstrates a simple yet reliable method for detecting motion and triggering alerts. By combining a PIR sensor, Arduino microcontroller, LED, and buzzer, the system provides immediate feedback through visual, audible, and serial notifications, making it suitable for small-scale security applications. Its low cost, ease of assembly, and continuous monitoring capabilities make it an ideal prototype for basic intrusion detection and home security solutions.

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