

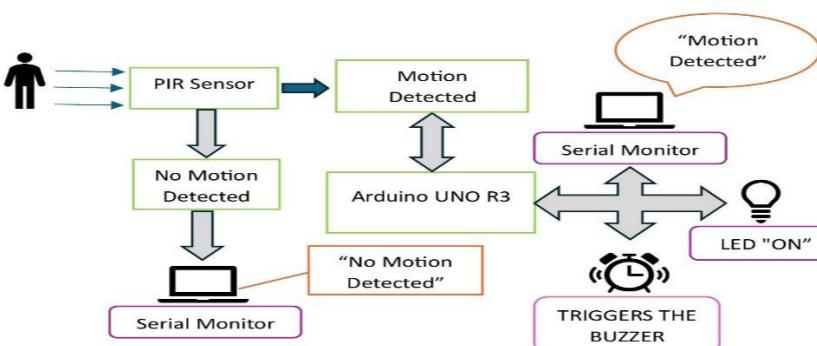


SECURITY SYSTEM USING PIR SENSOR

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

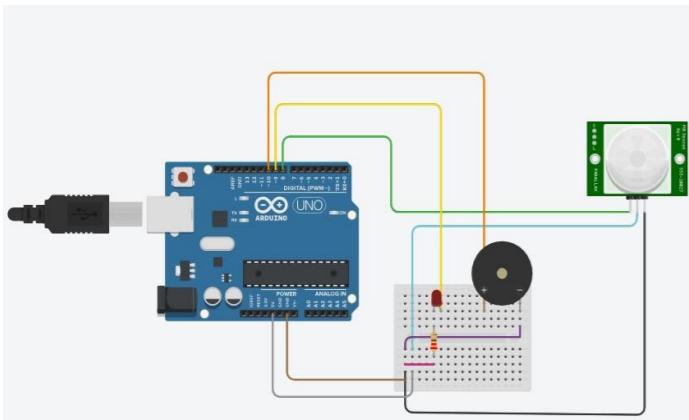


WORKING PRINCIPLE

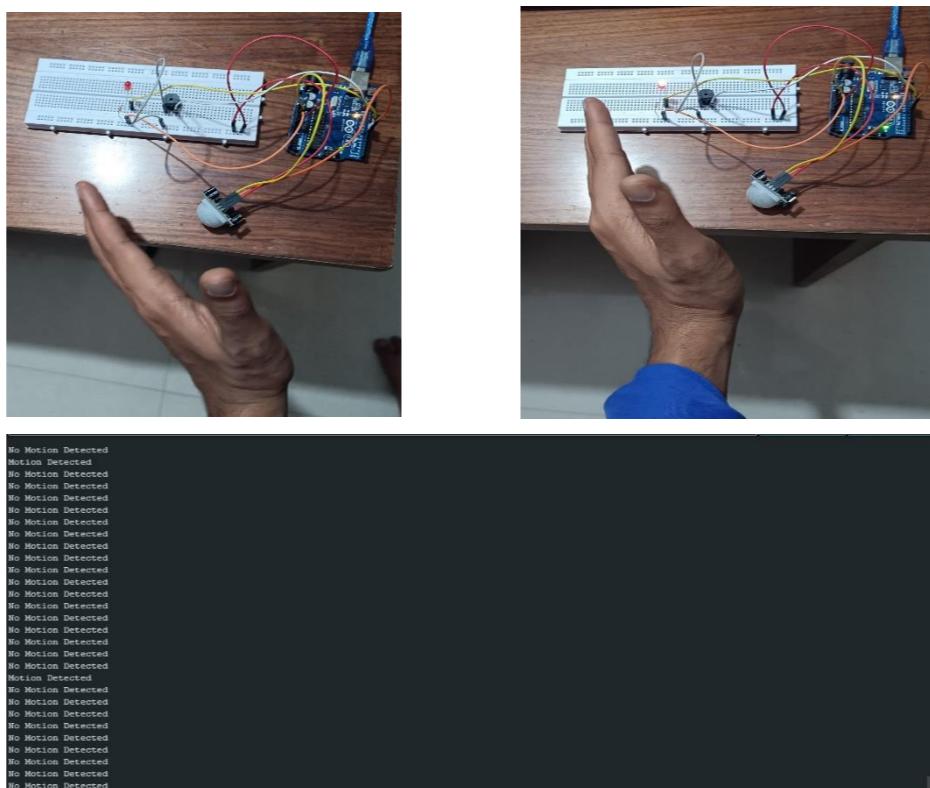
1. The PIR sensor detects motion by sensing changes in infrared radiation in its surroundings.
2. Upon detecting motion, the sensor sends a high signal to the Arduino microcontroller.
3. The Arduino processes the signal and activates an LED and piezo buzzer to indicate the detection.
4. A notification 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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