

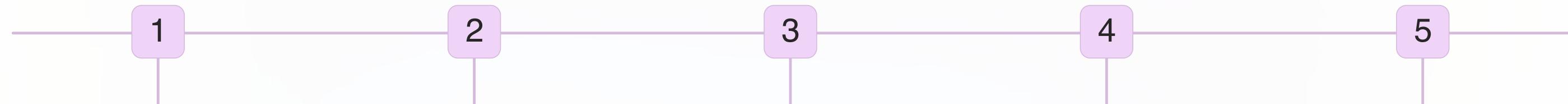
IoT-Based Home Security with Email Alert



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IoT-Based Home Security with Email Alert

Today, we'll explore the exciting realm of IoT and its application in home security. Using a Raspberry Pi as the brain, we've built a system that detects movement and sends email alerts, giving you peace of mind and enhanced security for your home.

Introduction

Security

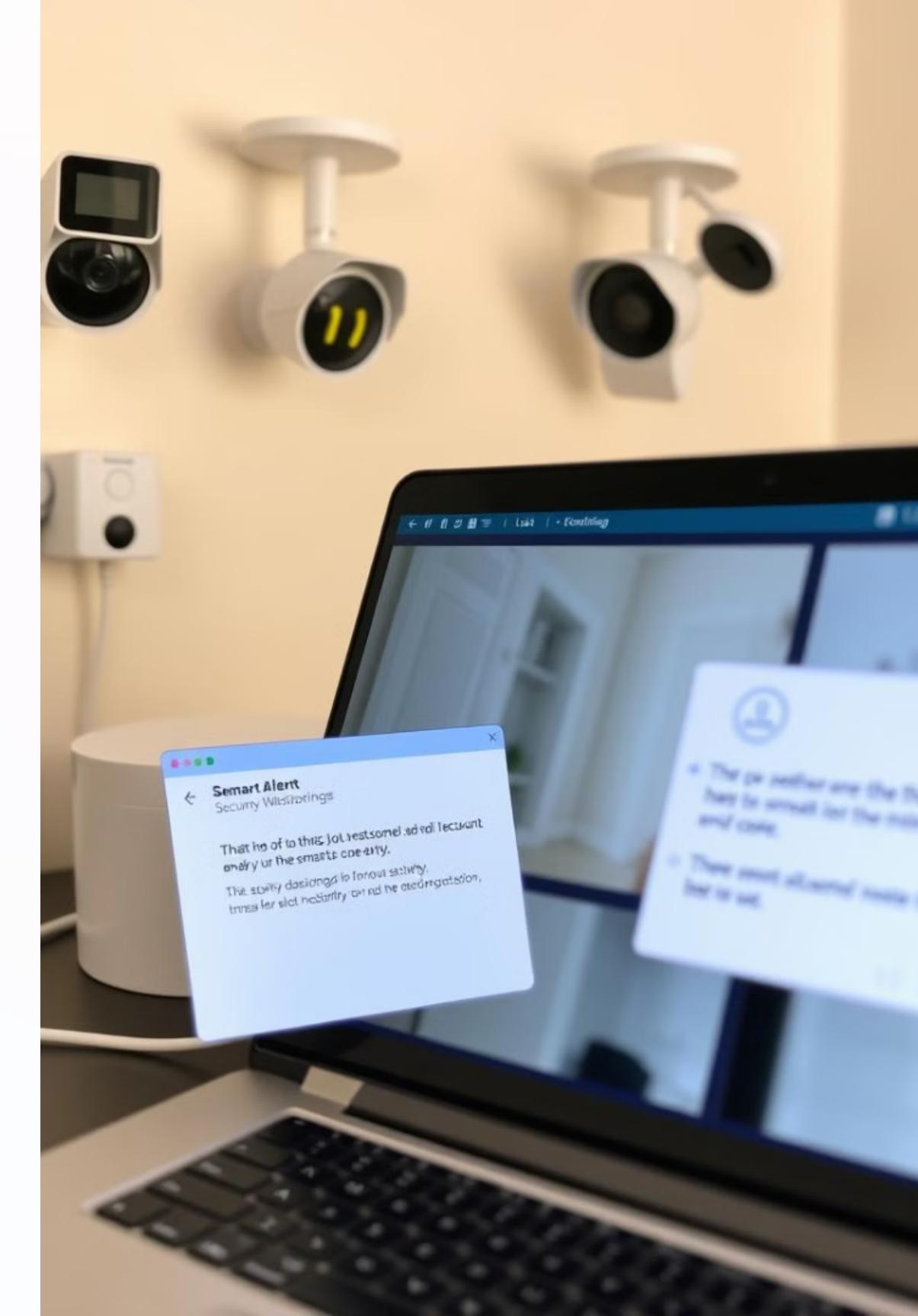
Our project aims to enhance home security using affordable technology and reliable email alerts.

Reliability

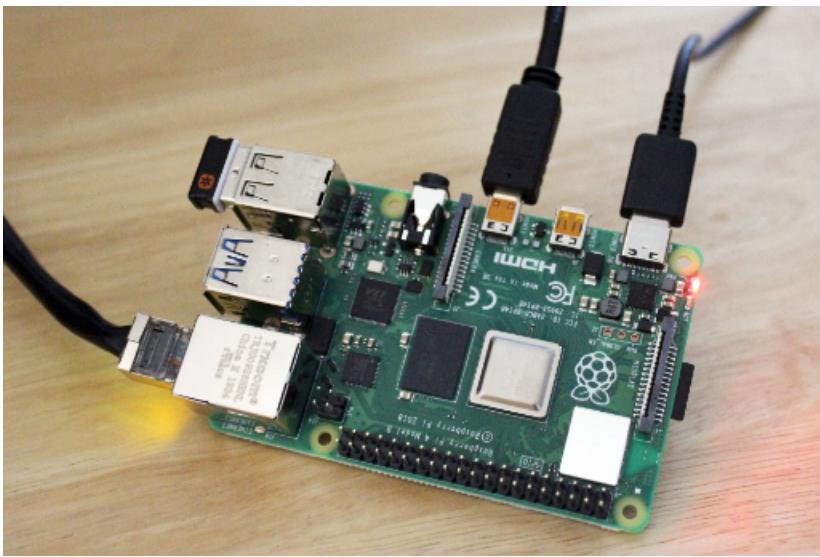
Email alerts are a reliable communication channel, ensuring timely notifications even in the case of internet disruptions.

Convenience

The system uses a Raspberry Pi, making it easy to customize and integrate with existing smart home features.

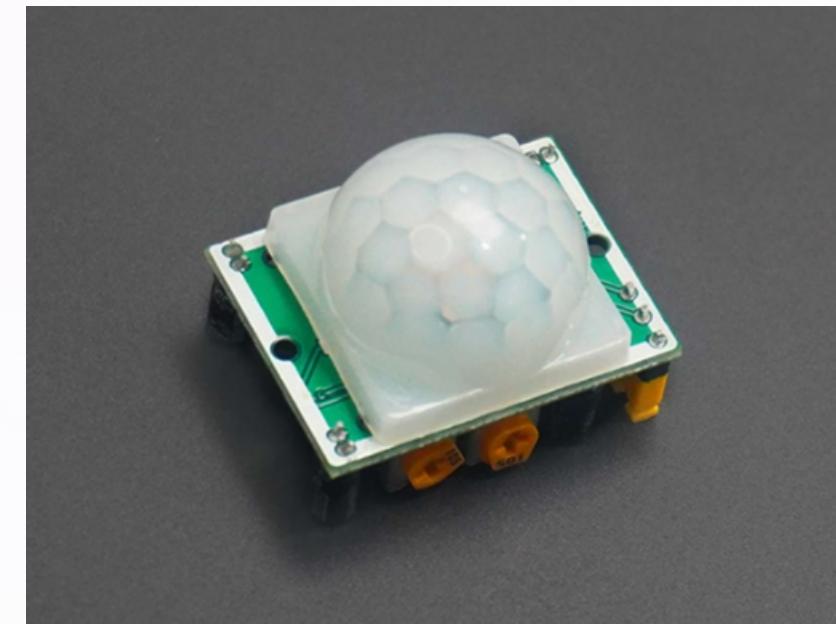


Components



Raspberry Pi

The brains of the operation, it controls the entire system.



PIR Sensor

Detects movement in the home and triggers alerts.

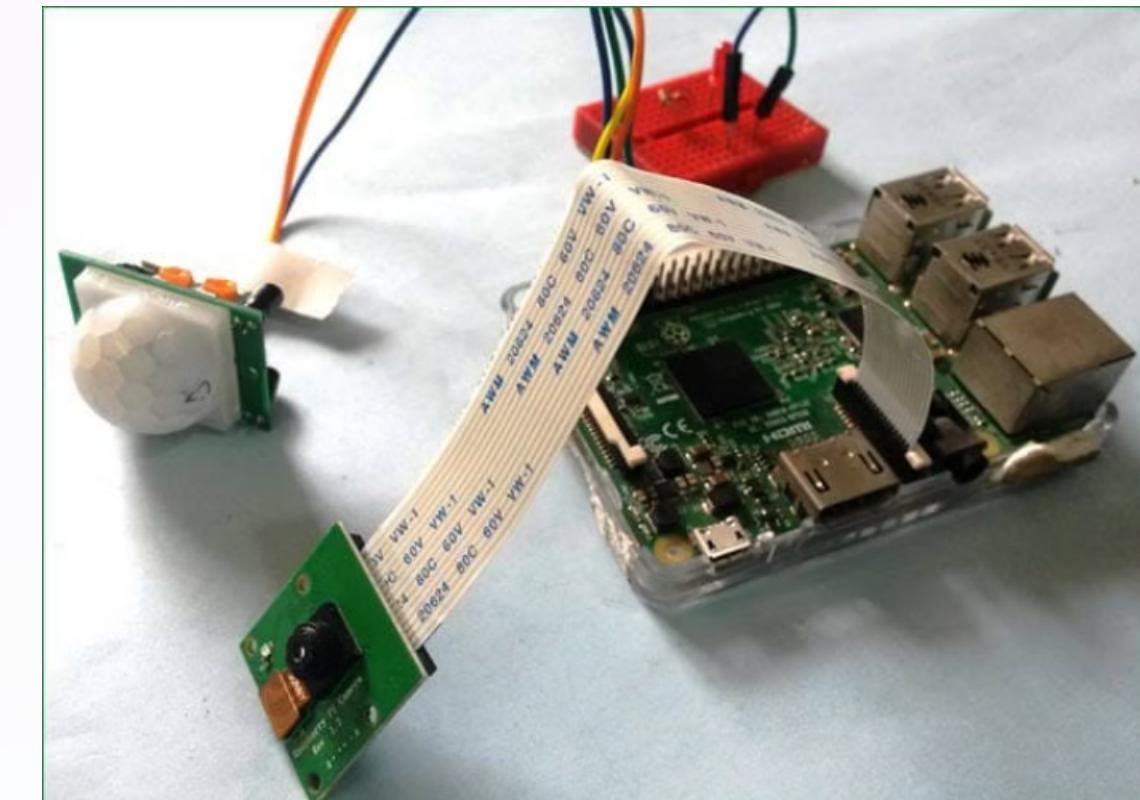
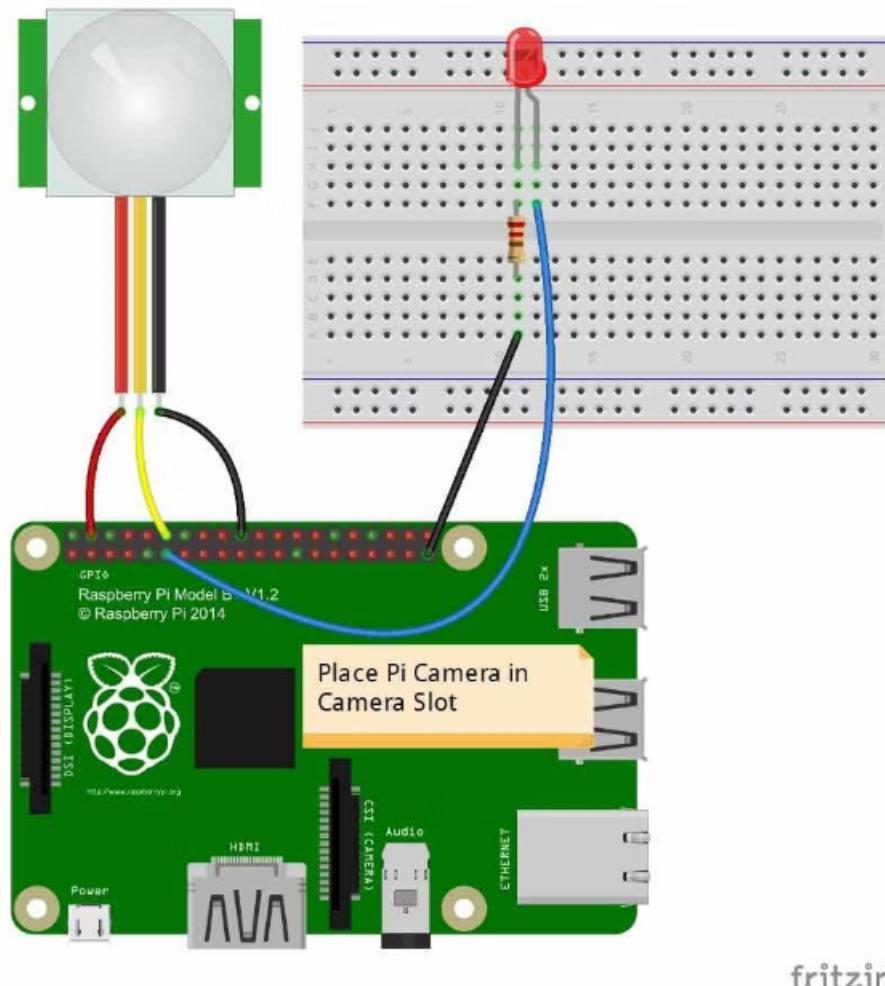


Pi Camera

Captures images when motion is detected.

Circuit Description

The circuit is straightforward, connecting the PIR sensor to the GPIO pins on the Raspberry Pi. The Pi Camera is also connected to the Raspberry Pi. Power is supplied to all components through the Pi.



Working Explanation

The PIR sensor detects movement. When movement is detected, the Raspberry Pi triggers the camera to take a picture and sends an email notification to the user. The email includes the captured image for immediate confirmation of the event.



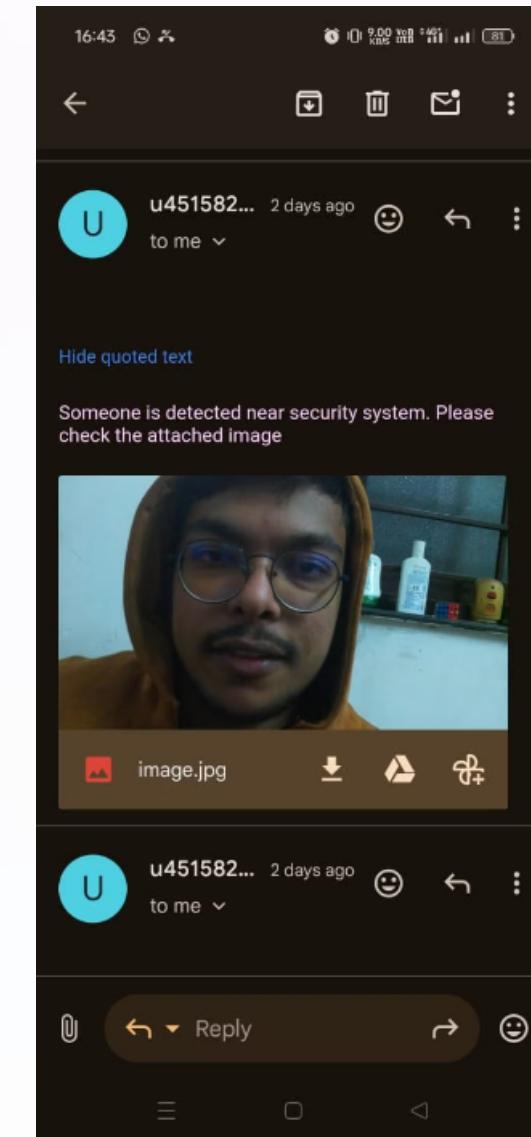
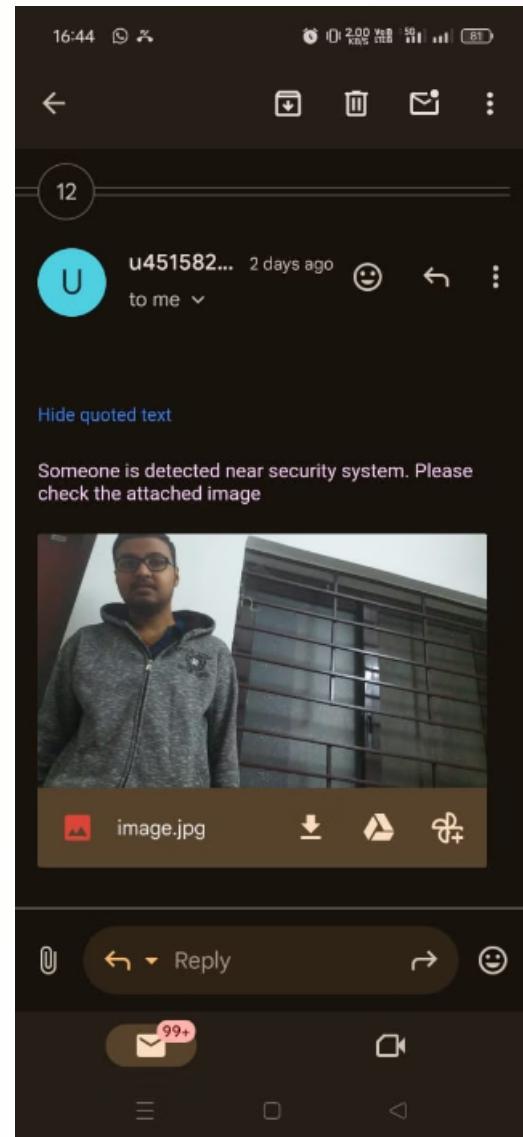
Working Code

The code is written in Python, utilizing libraries for sensor reading, email sending, and camera capture. The code implements a loop that continuously checks for movement from the PIR sensor and triggers the necessary actions.

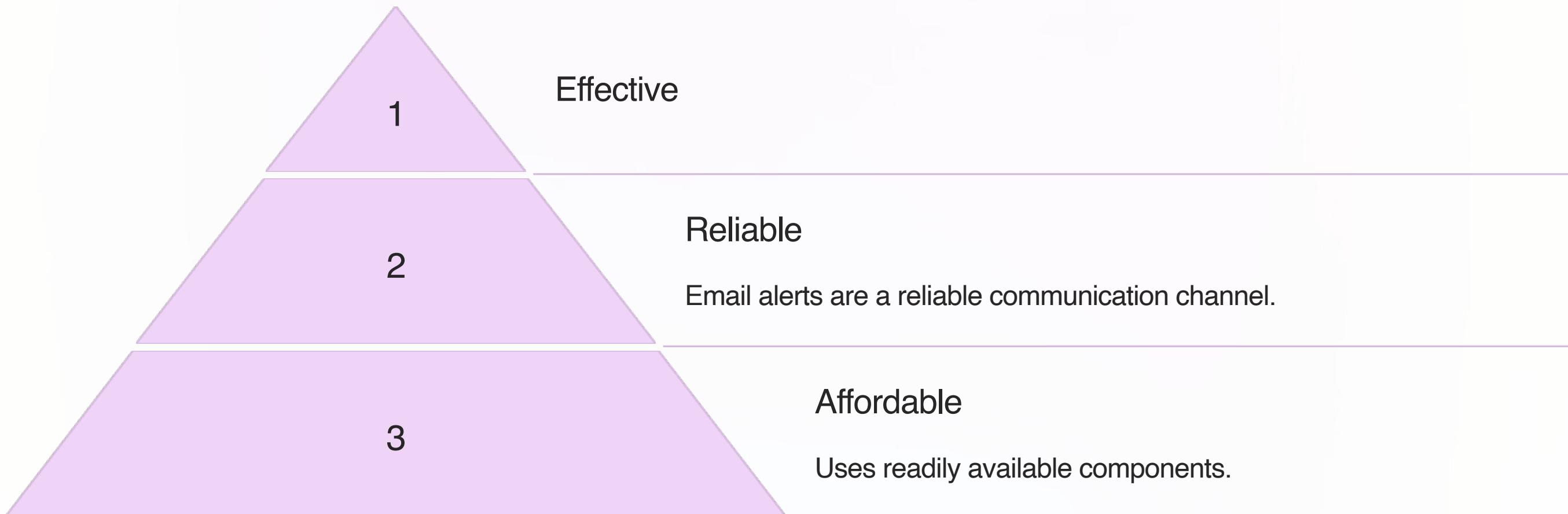
```
1 import RPi.GPIO as GPIO
2 import time
3 import os
4
5 # Pin configuration
6 PIR_PIN = 7 # Adjust based on your GPIO connection
7
8 GPIO.setmode(GPIO.BEAD)
9 GPIO.setup(PIR_PIN, GPIO.IN)
10
11 print("Waiting for motion...")
12
13 try:
14     while True:
15         if GPIO.input(PIR_PIN):
16             print("Motion detected! Capturing image...")
17             # Run the command to capture the image and send the email
18             os.system('libcamera-still -o image.jpg && echo "Someone is detected near security system. Please check the attached image" | mail -s "Alert ! Security Breach" -A image.jpg uttamgupta2003sg@gmail.com')
19             time.sleep(10) # Prevent repeated triggers (adjust the delay as needed)
20         else:
21             print("No motion")
22             time.sleep(1)
23 except KeyboardInterrupt:
24     print("Exiting program...")
25 finally:
26     GPIO.cleanup()
```

Output

This is the final image of our successfully implemented project, as received via email.



Conclusion



Future Scope and Improvements

1

Cloud Integration

2

SMS Alerts

Integrate with cloud platforms for data storage and remote monitoring.

3

AI Analysis

Utilize AI for more sophisticated intruder detection.



Thank You

Thank you for your time and interest. I hope this presentation has provided valuable insights into the potential of IoT in home security.