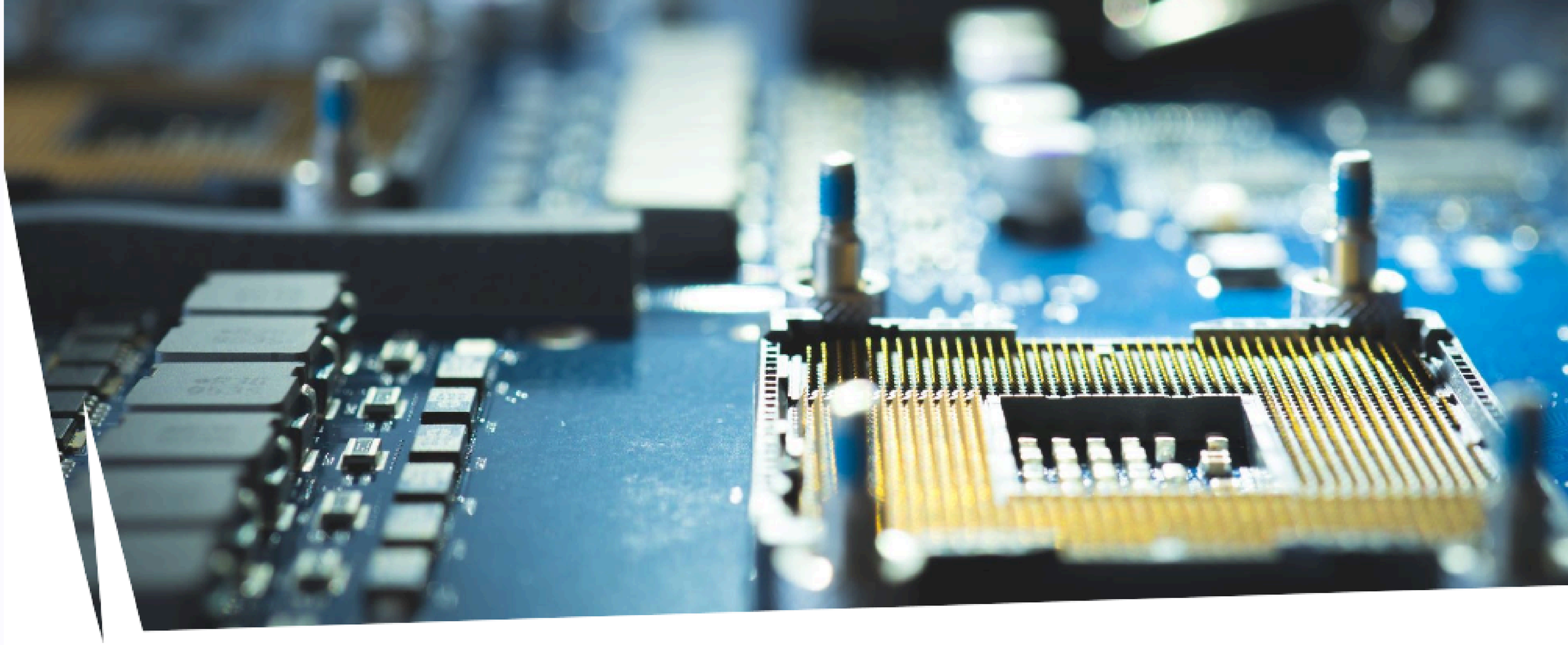


INTRUDER ALERT SYSTEM USING MOTION SENSORS WITH A GSM MODULE

BTECH 4TH SEMESTER MINI PROJECT(EE229

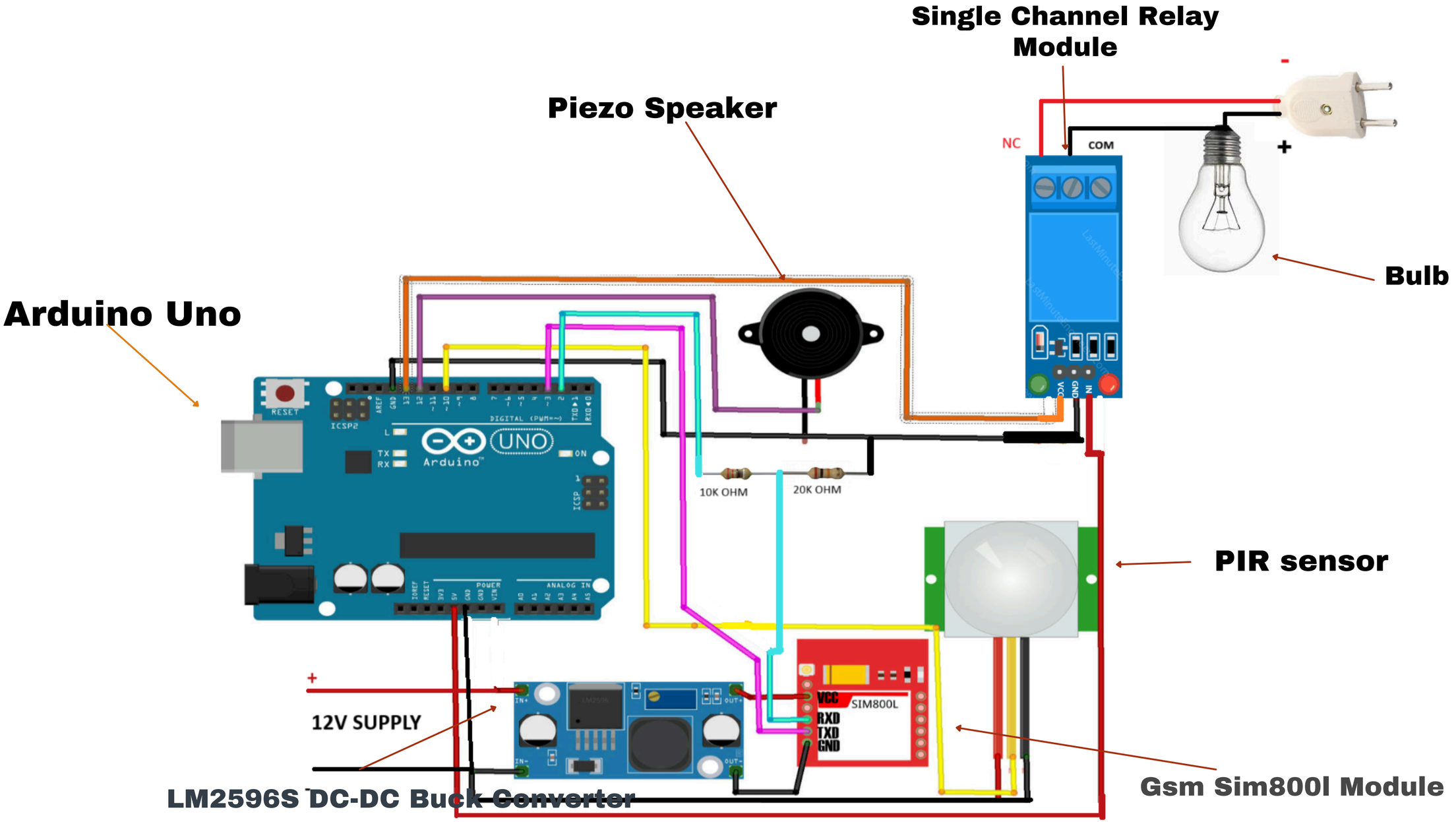
Introduction

In this presentation, we will explore an intruder alert system that utilizes motion sensors and a GSM module. This system offers a cost-effective and reliable solution for residential and commercial security. We will delve into the components, functionality, potential improvements, and overall effectiveness of this system.

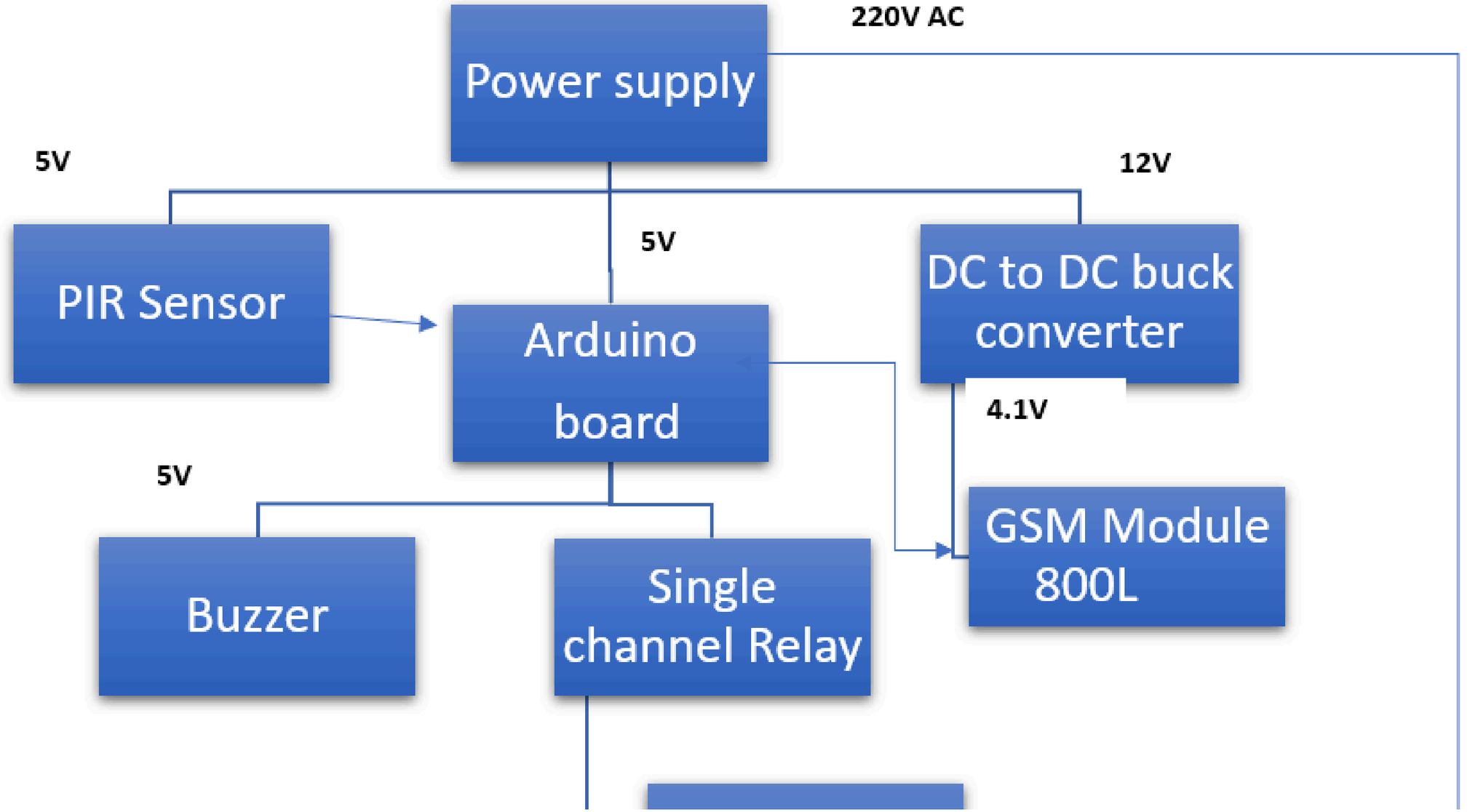
PURPOSE

The main purpose of building an Intruder Alert System Using Motion Sensors with a GSM Module is to enhance security and provide remote notification in case of unauthorized entry. Here's a breakdown of our goals:

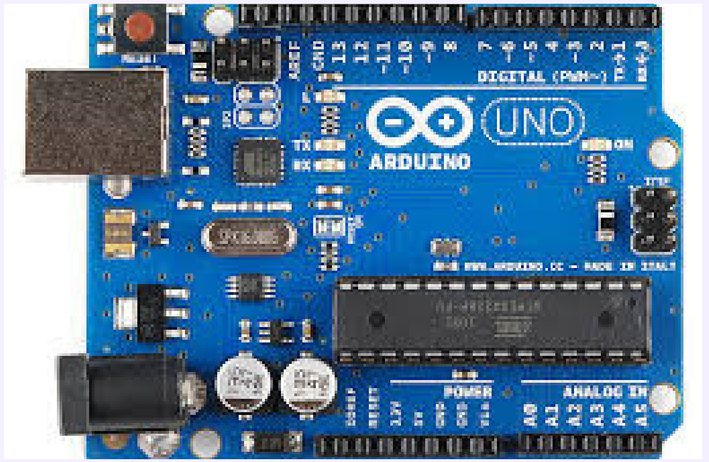
- **Intruder Detection**: The motion sensors pick up movements within their designated area, indicating a potential intruder's presence.
- **Alert System:** Upon detecting motion, the system triggers an alarm (often a loud buzzer) to deter the intruder and draw attention.
- **Remote Notification**: The GSM module, equipped with a SIM card, allows the system to send SMS alerts to pre-programmed phone numbers. This ensures the property owner or designated contacts are informed even if they're not physically present at the location.


Single Channel Relay Module
Piezo Speaker
Arduino Uno
NC
COM
-
+
Bulb
10K OHM
20K OHM
PIR sensor
+
12V SUPPLY
VCC
RXD
TXD
GND
SIM800L
LM2596S DC-DC Buck Converter
Gsm Sim800l Module

Block Schematic Diagram



Components

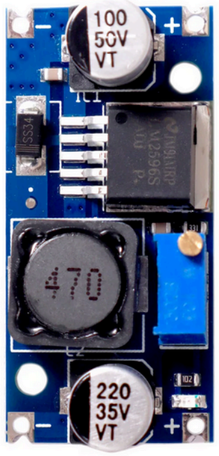


Arduino Uno is a popular single-board microcontroller, a mini computer for electronics projects. It is basically used in communications and in controlling or operating many devices .

A passive infrared sensor is an electronic sensor that measures infrared light radiating from objects. PIR sensors mostly used in PIR-based motion detectors. Also, it used in security alarms and automatic lighting applications

A piezo speaker is like a tiny buzzer. It uses electricity to vibrate and make sounds, perfect for beeps and simple noises in small devices.

A relay module is a circuit board that combines a relay with other electronic components to make it easier and safer to use in various applications.



A DC-to-DC buck converter, also called a step-down converter, is a circuit that takes a higher DC voltage and reduces it to a lower DC voltage.

A GSM (Global System for Mobile Communications) module is a compact device that adds cellular network communication capabilities to our project

An electric lamp, more commonly known as a light bulb, is a fundamental lighting technology that efficiently transforms electrical energy into visible light

Motion Sensors: Working Principle and Placement

Detection

Sensors monitor for infrared changes indicating movement

1

2

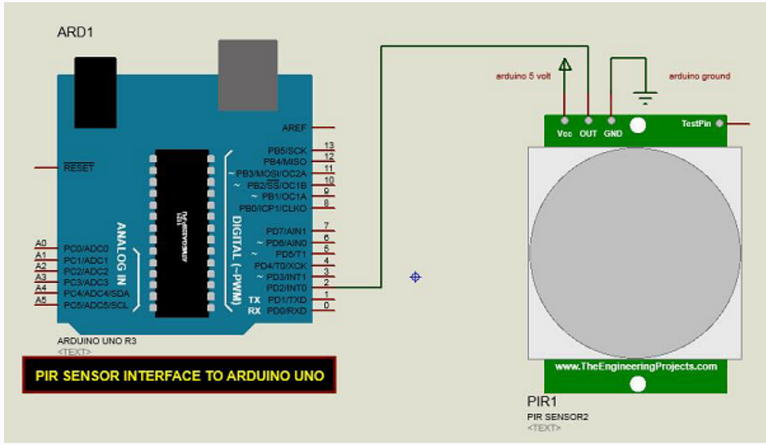
Triggering

Sensors send signals to the control panel to activate alarms

Placement

Strategically positioned to cover entry points and high-traffic areas

3



GSM Module: Role and Integration

1 **Remote Notification**

Alerts homeowners and security personnel via SMS or app

2 **Remote Monitoring**

Allows system status checks and control from anywhere

3 **Seamless Integration**

Connects the system to the broader home automation network

Working Methodology

1

Sensor Activation

Motion triggers sensor to send signal to control panel

2

Alert Processing

Control panel analyzes input and determines appropriate response

3

Notification Dispatch

GSM module sends alerts to homeowners and security teams

System Architecture and Connectivity

Sensors

Detect movement and trigger alerts

Control Panel

Coordinates system functions and responses

GSM Module

Enables remote connectivity and notifications

Connectivity

Integrates with mobile phone

Future Enhancements

Expanded Sensor Network

The system's functionality can be enhanced by incorporating additional sensors to provide a more comprehensive security .

Smartphone App for Enhanced Control

A dedicated smartphone app could offer a user-friendly interface for interacting with the system. Users could receive real-time notifications of triggered alarms

Camera Integration for Visual Verification

Improve security with fingerprint or facial recognition

Cloud Connectivity and Remote Management

Cloud connectivity would enable remote monitoring of the system's status, allowing users to check on their property from anywhere with an internet connection

Conclusion

This report has explored the design and implementation of a cost-effective intruder alert system utilizing motion sensors and a GSM module. This system offers a practical solution for residential or commercial security applications, effectively detecting unauthorized entry attempts and triggering real-time notification via phone call alerts. The report has detailed the system's components, functionalities, and limitations, while acknowledging its potential for further development.

THANK YOU